World Survey of Civil Aviation

AFRICA

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WORLD SURVEY OF CIVIL AVIATION

AFRICA

1960

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Foreword

This is the second in a series of foreign market surveys of civil aircraft and aeronautical products. The first covered Japan. The series discusses aircraft fleet composition and commercial and general flight operations. Special emphasis is given to market potential, trade and investment opportunities, and competitive factors affecting sales of U. S. aircraft and aeronautical products.

Special appreciation is extended to members of the U. S. Foreign Service and others at Foreign Service posts abroad, who supplied the basic data. These data were supplemented by other information on file in the Department of Commerce.

This publication, which discusses only selected African countries, was prepared by Richard E. Cohen, Office of the Special Assistant to the Administrator (Aircraft). Further details on any of these countries or data on other African countries may be obtained from the Office of the Special Assistant.

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Africa: An Overall View

Africa is almost four times the size of the United States and has a population of about 220 million. Although its economy has been predominantly agricultural, its vast reservoir of natural resources offers a good potential for industrial growth. Large oil reserves discovered in the northern desert areas are offering developmental opportunities. The hydroelectric power, mining, and industrial capacity in the southern area, from the Congo to South Africa, has already been tapped and offers an immense potential for full exploitation.

In most of the area below the Sahara and north of the Congo, resources are scarce and, except in the fairly prosperous countries along the western coast, little economic development has occurred.

Colony status is ending for large areas of Africa. In 1960, 16 States will become independent, and they will require capital, managerial skills, and trained manpower in order to establish self-government and build balanced economies. The continent has in the past been largely dependent on Western Europe for trade and investment, but the United States is penetrating this market and can probably enlarge its participation as the African nations make economic progress.

THE ROLE OF AVIATION IN AFRICA'S FUTURE

Rapid, economical inter- and intra-State transportation can serve to expedite this progress by providing essential internal communications for Government functions and services and an interterritorial link enabling the pooling of resources. Only air services can provide a satisfactory transportation network. The possibility of adequate surface transportation is very remote owing to topographical barriers and wide distances between centers of population and between sources of supply and markets.

The majority of the new African nations are expected to establish airlines to replace domestic services formerly maintained by the colonial powers and to meet new requirements. To facilitate this transition, the Conference of Independent African States recently proposed forming a Council for African Economic Cooperation, whose major responsibilities would be to foster close cooperation between the various African national air carriers, and to examine the feasibility of creating an Air Union of Africa.

The new airline companies in Africa seem to favor acquiring turboprop and jet equipment, especially in international services. Many States wish to maintain or develop such service as a symbol of national prestige, but will probably have to defer their plans until they learn more about local aviation requirements and the economic implications of competitive services. The demands on the national economies for new domestic services will also have to be taken into consideration.

The new States are being advised to give priority first to the development of adequate internal air services and then to a trans-African service by an African airline using equipment pooled by the individual States. This procedure would provide an interconnecting network of African air services while avoiding the financial drain required to equip individual long-distance operations. A trans-African system could be adequately operated with four-motor piston-engined equipment instead of the expensive turbo- and jet-powered planes required to compete on international routes.

The potential overall African market for new and used aircraft sales is difficult to estimate owing to the constantly changing political and economic conditions. For example, in a single week four colonies became independent. Estimating future sales is further complicated by the presumption that traditional ties in aviation operations between many African and European States may be maintained in some form after independence. Foreign investment or management interests retained in African airlines will probably give the participating State a competitive advantage in disposing of their surplus piston-engined aircraft in the African market. On the other hand, almost all of the planes that the foreign airlines will have available for surplus sale are U. S. makes. Therefore, even if sales of airplanes by U. S. companies are hampered, a tremendous market potential may arise for spare and replacement parts. Most of this equipment is already being imported from the United States.

AIRCRAFT IN USE

Through 1959 the total African civil air fleet comprised over 1,800 aircraft, including about 393 in use by some 35 commercial scheduled airlines, mostly European operated and/or managed. More than 54 percent of the total complement were U. S. makes, including 47 four-motor and 105 two-motor transports in scheduled use, and 5 four-motor and 23 two-motor planes in operation by charter firms. In addition to their African based international services, almost all the major international foreign flag carriers have been operating service to and through Africa. The foreign flag lines have accounted for the bulk of passenger and freight traffic. These international operations will probably continue undisturbed for the most part during the development of

African independence. The most important activity—nonscheduled, general-service flying—is the one that is ripe for further expansion. Most of the countries have domestically operated charter and feeder services, as well as aerial crop dusting, surveying, photography, and spraying activities, which are in line for substantial development.

MARKET POTENTIAL

U. S. aeronautical product exports to Africa amounted to about $2.5 million in 1959, compared to over $14 million in 1958 and $6.6 million in 1957. An increase in first-6-month shipments to $1.5 million in 1960 from about $0.5 million in 1959 indicates an encouraging upturn in the annual rate. Exports of new commercial passenger transports, valued at $3.2 million in 1957 and $11.2 million in 1958, dropped to less than $0.5 million in 1959 and only $65,000 in January-June 1960. Aircraft of 30,000 pounds and over empty airframe weight accounted for most of these exports in 1957-58, whereas none were shipped in 1959 and the first half of 1960. The drop in aeronautical product exports in 1959 paralleled the downtrend in all U. S. exports to Africa.

The potential market in Africa for light and medium utility aircraft is indicated by the increasing percentage of total U. S. aeronautical product exports represented by commercial and civilian utility aircraft of under 3,000 pounds empty airframe weight, 4 places and over. Such aircraft accounted for 12 percent of the total in 1957 and 38 percent in 1959, and the proportion was higher in the first 6 months of 1960 than in all of 1959.

U. S. manufacturers have been very successful in certain areas of Africa, and they can greatly expand their share of the market through increased sales efforts aimed at the vital need for general-purpose aircraft and by setting suitable prices and terms. U. S. light, twin-engine utility transports have very little competition in Africa, and the single-engine utility planes have almost none.

Import duties and regulations imposed by the African nations on purchases from the United States are minimal, and should not hamper sales. Thoughtful, efficient, and personalized competitive merchandising appears the salient requirement in developing this market.

Algeria

ROLE OF AIR TRANSPORTATION

More than 80 percent of Algeria's 846,000-square mile area is occupied by the Sahara Desert. The population totals more than 10 million. Development of the rich oil reserves in the desert is the key to the country's future economic growth. Air trans-

portation requirements have been increasing largely because of the disruption of customary surface transportation by political and economic unrest. The Government has been assisting local air clubs to purchase light planes for air taxi service in many small towns not on regular air routes and lacking other dependable transportation. In some remote areas, air transport is still the only reliable means of access to the outside world.

The Algerian civil aviation network is in many respects administered as part of the metropolitan French network, and it now has more interior traffic stops than France. Continued expansion of air transportation depends heavily upon future progress in petroleum and gas development in the Sahara, the country's foremost stimulus to commercial flying. The maintenance and development of this industry also require extensive pipeline and powerline patrol flying.

AIRCRAFT IN USE

The civil air fleet in Algeria has grown steadily, and 372 civilian aircraft are officially registered, including 111 U. S. makes. The most popular U. S. types are the DC-3 (13), DC-4 (15), 47G helicopter (24), and UC-61 (23). The 10 principal commercial air carriers operate 127 aircraft, mostly DC-3 size or smaller, of which 66, or about 52 percent, are U. S. manufactured. Private, business, and Government, nonmilitary flying accounts for 245 light, general-purpose type planes of which 44 are U. S. made.

COMMERCIAL AIRLINES

Service

Air Algerie (Compagnie Generale de Transports Aeriens Air Algerie), the principal domestic carrier, is a private company established in 1953, whose controlling interest is held by a French company. Its fleet, which is based and maintained at Algiers Airport, as of March 1959 comprised 17 aircraft, of which 14 were U. S. made. It operates between selected French metropolitan points and the major Algerian cities, and also maintains an internal Algeria-Sahara network. The service to Paris is by 2 L-749 Constellations, and the Algerian-metropolitan France and the inter-Algerian services by 9 DC-4's. The internal Algerian lines and the Sahara routes use 3 DC-3's and 3 Noratlas 2502's.

Two of the other nine Algerian commercial air carriers are headquartered in France but have an active fleet of aircraft based in Algeria. The total fleet of all 9 carriers comprises 107 aircraft, including 28 U. S. planes and 24 U. S. helicopters. The 19 Air France aircraft are used mostly in the Algerian-metropolitan France services, although their use for passenger transportation into the Sahara for mineral and petroleum research is increasing. Most of the other carriers were formed after the discovery of oil in

the Sahara in 1957, and they provide air taxi and general commercial services to the petroleum industry.

Air Algerie offers the only major air cargo service, transporting mechanical equipment and apparatus from France to Algeria and returning with special high-value fruits and vegetables. The various airlines carry a substantial amount of oil-prospecting equipment and supplies into the Sahara.

Disposal and Reequipment Programs

Of the 10 principal Algerian air carriers, 7 have specific plans to dispose of 37 aircraft. These companies hope to dispose of 9 DC-3's, 2 DC-4's, 2 L-749's, and 3 UC-61's before 1964, and are also scheduling the disposal of 6 D. H. Dragons, 7 Avro XIX's, 3 Boisavia B601L's, 2 Jodel D-140's, and 3 Nord 1203's. The 7 carriers expect to replace the 37 aircraft, although not on a plane-for-plane basis. U. S. aircraft to be acquired include 7 utility planes and 10-12 Super 18's. Afric Air has indicated an interest in acquiring some DC-3's, which they can probably obtain from those being disposed of by the other companies. Also scheduled for purchase are 3 D. H. Dragons, 6 D. H. Herons, 2 Sud Caravelles, 3 Nord 2502's, 2 Dassault Communautes, and 2 Super Broussards.

Although about half of the commercial air fleet is U. S. made and certain types of U. S. aircraft continue to be in demand, competitive British and French products are gaining popularity.

The uncertain political and economic conditions in Algeria are hindering the commercial airlines' large-scale and long-range expansion plans. Import quotas on both new and used aircraft and aircraft parts also influence acquisition plans.

GENERAL AVIATION

A total of 245 civil aircraft are owned and operated for other than commercial airline service. The unreliability of surface transportation has resulted in increased use of aircraft for important business and private transportation between the cities and into the interior. Companies not engaged primarily in the transportation of passengers and freight operate 27 aircraft, including 5 U. S. planes.

The 38 flying clubs operate 165 light planes, almost 74 percent French and 20 percent U. S. made. Of the 20 utility aircraft operated for private business or pleasure, 4 are U. S. made and most of the rest, French. The French Government owns and bases 33 nonmilitary aircraft in Algeria, including 12 D. H. Moths and 10 U. S. planes, 2 of which are DC-3's.

MARKET POTENTIAL

Demand for surplus U. S. piston-engine aircraft will probably be very small during the next few years. Most of the transport

companies have plans to replace some of their active fleet with more modern equipment, but many of the displaced aircraft will be retained in Algeria for transfer to other uses.

A small market may develop for two-engine piston transport planes if increased demand for air services taxes the capacity of the minor airlines, which are currently using 5-15 passenger planes. The best potential market seems to be for light, two-engine general-purpose aircraft that are economical in price and operation. Such aircraft can be expected to operate at full or near-full capacity on Algeria's local routes, and they meet less foreign competition than other types.

Algerian Civil Air Fleet—372

Commercial airlines, total		127
Compagnie Generale de Transports Aeriens Air Algerie (CGTA-Air Algerie), total		20
Sud Caravelle	2	
L-749 Constellation	2	
DC-4	10	
DC-3	3	
Nord 2502 Noratlas	3	
Air France, total		19
DC-4	5	
DC-3	2	
Breguet 763	12	
Societe Algerienne de Constructions Aeronautiques (Afric Air), total		9
Avro XIX	5	
Piper PA-23	4	
Compagnie Generale de Transports en Algerie, total		7
Boisavia B601L	3	
Jodel D-140	2	
Avro XIX	2	
Escadrille Mercure, total		5
Cessna UC-78	3	
Aero 680E	1	
Beech Super 18	1	
Societe Aerotechnique, total		13
DC-3	6	
Beech Super 18 Series E	2	
Broussard MH1521	5	
Compagnie Gyrafrique Nord, total		28
Alouette 3130	3	
Bell 47G	23	
Percival EP9	1	
Sikorsky S-58	1	
Societe Generale d'affretements Aeriens, total		13
D.H. 89A Dragon	6	
Super Aero 45	1	
Cessna 180	1	
Bristol Freighter	5	

Algerian Civil Air Fleet—Con.

Commercial airline, total--Con.		
Societe Air Oasis, total		7
Nord 1203	3	
Cessna UC-61	3	
D.H. 89A Dragon	1	
Compagnie Aero Sahara, total		6
Dornier DO-27	4	
D.H. 89A Dragon	2	
General aviation, total		245
Business flying, total	[1]27	
French makes	7	
U.S. makes	6	
U.K. makes	10	
Other makes	4	
Flying clubs (38), total	[2]165	
French makes	122	
U.S. makes	25	
U.K. makes	12	
Belgian makes	6	
Private service, total		20
French makes	14	
U.S. makes	4	
U.K. makes	2	
Government, nonmilitary use, total	[3]33	
French makes	11	
U.S. makes	10	
U.K. makes	12	

[1]Includes 10 light transports.
[2]Includes 1 light transport.
[3]Includes 2 DC-3's.

Angola

The Portuguese Overseas Province of Angola is situated on the southwestern coast of Africa and has a narrow low coastal plain rising into the interior mountains. It has an area of over 480,000 square miles, or 4 times the size of New Mexico, and a population of about 4.5 million.

ROLE OF AIR TRANSPORTATION

The country's economic development depends heavily on air transportation, the only quick and efficient year-round service connecting the distant and often isolated areas of the country with the main domestic centers and with foreign countries. Although the railroads still carry most of the cargo and passengers between important inland points and the sea ports, air service and roads provide the only connections between the rail lines running into the interior. In the absence of specialized air cargo services, the existing air transport facilities are used for the quick transportation of perishables or urgently required supplies and equipment, as well as for continuous movement of passengers. Furthermore, rapid air communication is utilized to maintain Government direction and authority in the remote, sparsely settled areas.

Air transportation is expected to grow moderately in importance as air facilities and services are expanded. Flights are to be increased in number and extended to more remote areas. The expansion, motivated by industrial and agricultural development, will, however, be at a restrained pace.

Even though great strides can be expected in the industrial sector, many products will still have to be transported by surface on account of cost factors.

The Angolan Government plays a major role in civil aviation. The laws and regulations covering aviation are based on the standards evolved from the Warsaw Conventions, the Chicago Convention of 1944, and International Civil Aviation Organization (ICAO) agreements. The regulatory body is the Civil Aeronautics Service, which is under the jurisdiction of civil aviation authorities in Lisbon, Portugal. The Aeronautics Council, in Lisbon, has policy jurisdiction over metropolitan Portugal and the overseas territories in such matters as development of facilities, aircraft purchases, and air operations.

AIRCRAFT IN USE

As of September 1, 1959, 41 aircraft were registered in Angola, including 29 U. S. makes. Sixteen were owned and operated by commercial airlines; 5 by business firms; 2 in nonmilitary, Government operation; 3 by private parties; and 15 by flying clubs.

COMMERCIAL AIRLINES

Service

The main carrier, the *Divisao de Exptoracao dos Transportes Aereos* (DTA), is wholly Government owned and operates primarily within Angola. It operates 16 aircraft, of which 13 are U. S. made. The only other noteworthy carrier is *Transportes Aereos Portugueses* (TAP), the national Portuguese airline, connecting Portugal with the Overseas Provinces and 50 percent Government owned. In addition to its European and North African services, TAP maintains three flights weekly from Lisbon to Luanda, Angola, using three Super Constellations. The Portuguese-African airlines--DTA; *Divisao de Exptoraco dos Transportes Aereos* (DETA), the Mozambique airline; and TAP--are being encouraged and have begun to operate in close conjunction with each other, a development that might be considered a step toward unified operations.

Domestic air traffic in Angola increased steadily in the period 1954-59, while international traffic has remained constant or even declined slightly in some periods. The only foreign flag carriers serving Angola are Sabena and Air France, each having one weekly round-trip flight to Luanda from Brazzaville in the Congo Republic, using DC-3 aircraft.

The only international airport is at Luanda, and about 40 other fields are located throughout the country. Expansion of Luanda to accommodate jet aircraft and improvement of other existing facilities are likely in the next few years. Additional airports are planned for construction in eastern Angola as economic and military requirements increase. Luanda Airport will be TAP's central base in Africa, maintaining a stock of spare parts, a special storage hangar, and an increased resident technical staff.

Disposal and Reequipment Programs

DTA plans to gradually replace all its DC-3's within 6-10 years. Several of the aircraft to be replaced soon on the main local routes will probably be retained in the country for military or private use and some may replace the smaller aircraft in use on minor passenger runs.

DTA is said to favor the Fokker Friendship as a replacement for its DC-3's because it is economical to purchase and operate and has good rated operation efficiency under the severe climatic and physical conditions of the area. TAP may possibly add another Constellation to its African-service fleet and increase the flights from Lisbon to the African Provinces to four a week. In addition, the Portuguese Air Force has obtained permission to purchase 12 DC-6 transports from commercial sources and 6 surplus 2-engine Nord Atlas cargo aircraft from the French Government for use in Angola.

GENERAL AVIATION

Nonscheduled air activities are negligible because charter service by DTA fills most of the special requirements. Only 5 planes, of which 2 are U. S. made, are operated by private businesses. Industrial flying has been almost exclusively for aerial surveys, most of which have been and will continue to be conducted in foreign-owned aircraft flown in specifically for that work. A small Portuguese air survey company and the Government's Geographic and Map Service have each kept a U. S.-made aircraft at Luanda Airport. A short-haul air taxi service has been formed and plans to operate a number of U. S.-made Model 182 utility planes.

Instructional and pleasure flying has been popularized through the flying clubs that have sprung up with Government financial aid. The 9 clubs now in operation have a registry of 15 utility-type aircraft, of which 12 are U. S. made. Of the 3 private registered aircraft, 2 are U. S. made.

Some expansion is expected in general commercial flying because of the introduction of crop dusting, continued mineral exploration, and the beginning of full-range air taxi services. Helicopters will likely be used in the future by large plantations, and for official local and central government transportation. Business flying should expand as firms become financially better able to maintain their own aircraft.

MARKET POTENTIAL

Almost 75 percent of the aircraft and aeronautical ground equipment now in use are U. S. made, and these products have played a large part in the country's aviation development. Although a continuing market is seen for U. S. aeronautical products as civil aviation expands, demand for U. S. surplus piston-engine aircraft will probably be small. DTA plans to purchase turboprop equipment, and the replaced aircraft will be used to increase minor route service according to traffic demands. U. S. replacement parts and some light utility aircraft are favored because of their availability, prestige, and variety, but competition in this market from European producers is increasing.

The major factor hampering purchases of aircraft by DTA is financial. Operating capital and development funds available for purchases are limited. The airline will not be under pressure to expand capacity until demand for services increases significantly. Although dollar exchange and import license are usually available for purchases of American aviation equipment, the Government tries to conserve its dollar holdings. Other considerations being equal, purchases of commercial and private aircraft from European sources would be favored.

A general import tax of 1 percent is imposed on aircraft and parts except military, which enter free.

Angolan Civil Air Fleet—41

Commercial airlines, total		16
Divisao de Exploracao dos Transportes Aereos (DTA):		
DC-3	7	
Beech Super 18 series light transports	4	
De Havilland Dragon	3	
Fairchild PT-26	2	
General aviation, total		25
Flying clubs, utility aircraft, total	15	
Aero-Clube De Angola	3	
Aero-Clube De Benquela	4	
Aero-Clube De Congo	1	
Aero-Clube De Huambo	1	
Aero-Clube De Lobito	1	
Aero-Clube De Mocamedes	2	
Aero-Clube De Novo Redondo	1	
Aero-Clube De Porto Amboin	1	
Aero-Clube Do Pombo	1	
Private service, utility aircraft	3	
Business flying, total	5	
U.S.-made utility planes	2	
D.H. 82-A Tiger Moth	1	
Gemini M 65-1A	1	
D.H. C3 Otter	1	
Government, nonmilitary, total	2	
Beech D18S light transport	1	
D.H. 89 Dragon Rapide	1	

East Africa

The three British East African territories of Kenya, Uganda, and Tanganyika encompass some 682,000 square miles, and the British Protected Sultanate of Zanzibar Island another 1,000 square miles, making a total area about a fourth the size of the United States. Kenya and Uganda straddle the Equator, and Tanganyika lies entirely below the Equator. Kenya and Tanganyika border the Indian Ocean, but Uganda is in the interior. The topography of the mainland territories varies from a narrow tropical coastal plain through plateaus and forest areas to arid deserts and extremely high mountains. Zanzibar, off the coast of Tanganyika, has a fairly regular terrain. The territorial Governments are entirely separate, but they participate in the East Africa High Commission, the source of certain universal administrative services. Kenya is a colony, although a strip of its coast is a protectorate leased from the Sultan of Zanzibar; Uganda is a protectorate; and Tanganyika is a trust territory under British administration. The economy of the area is largely agricultural, although manufacturing is growing.

ROLE OF AIR TRANSPORTATION

The East African Airways Corporation (EAAC), owned jointly by the four Governments, operates on a semi-independent basis, supplying the only local scheduled air line service in the area. Through such ownership, the Governments are immediately concerned with the development of air transportation, and they give both indirect and direct assistance to aviation by providing new or expanded airport facilities, encouraging private flying, and supplying financial aid for aircraft purchases. Interest in flying is considerable, and growing demand is being met by increased commercial services and the formation of private flying clubs and charter firms. The attainment of a full-fledged modern airways system in the territories will have to be coordinated with the completion of improved airfields. Although surface transportation is well developed, air services fill a distinct need for rapid all-year movement of passengers and freight within the area, between the territories, and in international transit. In addition, air services supplement surface systems by providing connecting feeder lines and opening remote areas to communications and development.

EAAC's operations increased during 1959, and the resultant additional maintenance and overhaul work was done at the new engineering base at Nairobi Airport, Kenya. Independent operators have not had a comparable expansion of operations. International services through the Kenya airport are increasing--(British Overseas Airways) began offering Comet IV service in December 1959; South African Airways expected to start "707" jet service in October 1960; and most of the other major international airlines plan

to operate jet aircraft by the middle of 1961 or early 1962. Since April 1959, Alitalia (Italian flag airline) has linked Uganda with Greece and South Africa, providing through passenger and cargo service.

AIRCRAFT IN USE

As of October 1959, 139 civil aircraft were registered in the East African territories--130 in Kenya, 8 in Tanganyika, and 1 in Uganda. Of these, 58 were owned by commercial operators, 58 by private operators, 13 by the Government, and 10 by flying clubs. The aircraft comprised 93 U. S. makes, 33 British, 11 Canadian, and 2 Italian. Among them were 4 four-engine and 23 twin-engine planes, including 3 Canadair C.4's, 1 De Havilland Heron 114, 10 C-47/DC-3's, and 7 De Havilland 89A Dragon Rapides.

COMMERCIAL AIRLINES

Service

EAAC, the only scheduled airline in East Africa that may be considered a national flag carrier, in 1959 moved into new headquarters at the Nairobi Airport in Kenya. The airline owns and operates 16 aircraft on scheduled domestic and international flights. In addition, it leases Bristol Britannia's from BOAC for biweekly service to London. EAAC's operations have been increasing. In addition to the internal service, it operates its own aircraft on trunk routes to Karachi and Bombay, India, and Johannesburg, South Africa. It provides scheduled all-cargo flights and charter services, and is the registered airmail carrier to all other cities served by it in East Africa. EAAC plans by the end of 1960 to introduce a fast service between the main East African population centers, using four-engine pressurized aircraft. The DC-3, mainstay of the domestic service, is ideal for the area because of its reliability, economy of operation, size, and ability to operate from smaller fields. For the international and interterritorial services, EAAC uses Canadair C.4's purchased through BOAC, which often furnishes advisory services.

Caspair Air Charters and Agencies, Ltd. (Caspair), is the only other airline offering regularly scheduled passenger service in East Africa. A subsidiary of Campling Brothers and Vanderwal Ltd., the largest air charter and servicing company in East Africa, Caspair functions as a semi-independent firm. It provides cargo and charter flights and is a registered mail carrier covering cities not served by EAAC or Campling Brothers. Caspair operates 5 aircraft--4 in passenger cargo service and 1 for instruction.

Disposal and Reequipment Programs

EAAC plans in 1960 to dispose of 4 D. H. 89A Rapide aircraft, whose operation is uneconomical. In addition, at least 2 DC-3's

are scheduled for early disposal. EAAC has on order for delivery in 1960 2 D. H. Comet Mark IV's for use on routes connecting East Africa with Europe, Pakistan, India, and South Africa. The Canadairs now servicing this traffic will be transferred to the main domestic routes. Replacements for the D. H. 89A's will come from EAAC's fleet of DC-3's at present. EAAC hopes eventually to replace all of the DC-3's, but has not yet found anything suitable. The ideal plane for most purposes in this area is a twin-engine, 6-10 seater.

U. S. and British aircraft are preferred by the East African operators because of past experience with them and availability of well-developed maintenance facilities.

GENERAL AVIATION

The 118 aircraft used in general aviation activities are registered as follows:

Kenya: About 109 are used for other than scheduled commercial services. This fleet comprises 59 single-engine, 4-seaters, including 54 U. S. makes; 46 single-engine, 1-3 seaters, including 23 U. S. makes; and 5 twin-engine, 5-6 seaters, of which 1 is a U. S. make. Five air charter firms operating 20 aircraft provide passenger and cargo service from Kenya throughout the East African territory. The largest, Campling Brothers, also operates servicing facilities, supplies flight training and aircraft maintenance instruction, and makes Red Cross flights, and is in addition the registered mail carrier to cities not serviced by the scheduled lines. Campling Brothers' fleet of 16 includes one plane registered primarily for instructional flying. Several charter firms and three specialists do locust spraying, aerial surveying, and other aerial work using 12 aircraft. Seven flying clubs own and operate 10 aircraft for hire to members and for flying instruction. The Government owns and operates 9 planes, 8 for police flying and the other for official use by the Directorate of Civil Aviation. Business firms use 25 aircraft for personal and business purposes. Individuals have 32 registered aircraft licensed for private flying, public transportation, and general aerial work. The Kenya registry includes all the Uganda and some of the Tanganyika private aircraft. An additional 5 U. S.-made light utility aircraft have been approved by the Kenya Government for purchase and will be delivered in late 1960.

Tanganyika: Three of the eight aircraft registered in Tanganyika are owned by the Government, and three, including a DC-3, by a private company. One of the other 2 is used for commercial aerial spraying, and one is privately operated by a sisal estate. The Government's planes are used for high-altitude survey work, but they will be replaced in 1960 by 2 U. S.-made PA-23 Apaches for transport and 1 Helio Super Courier for aerial photography and surveying.

Uganda: The only plane registered in Uganda is operated by the Police Air Wing, which was formed in 1958. A U. S.-made utility aircraft, it is maintained by Caspair, Ltd.

All of the private planes operated in Uganda and some of those owned and operated by residents of Tanganyika are included in the Kenya registry.

MARKET POTENTIAL

The potential market for surplus piston-engine aircraft is very limited. A considerable expansion of traffic on the domestic feeder lines could put EAAC in the market for four-engine planes of the DC-4 or DC-6 class to replace the present D. H. Rapides and DC-3's. However, more suitable aircraft may be available by the time such expansion occurs. In any case, extensive airport facility enlargement and modernization will be required to accommodate large planes. EAAC purchased its DC-3 fleet at a very favorable price after World War II, and given proper maintenance and adequate replacement parts, these aircraft will probably be operated for a long time.

In the utility plane field, the preference is for U. S. models, and the major U. S. manufacturers have agencies in Kenya that provide full servicing facilities. The market for additional sales of U. S. light planes is favorable if the Governments maintain their programs of encouraging aviation development, and if their economies remain stable. The expected airport and airways improvement and development programs should open a market for other aeronautical equipment.

Aircraft and completed parts and accessories may be imported duty free. Spare parts for aircraft shipped separately probably are dutiable at 22 percent ad valorem.

East African Civil Air Fleet—139

Kenya:[1]		
Commercial airlines, total		20
East African Airways Corporation (EAAC), total	16	
De Havilland 89A Rapide	4	
DC-3/C-47 Dakota	9	
Canadair C.4	3	
Caspair Air Charters and Agencies, Ltd., total	4	
Beech 35 Bonanza	1	
De Havilland 89A Rapide	3	
General aviation, total		110
Charter operators, total	20	
Campling Brothers and Vanderwal, Ltd.:		
Piper J3C Cub	2	
Piper PA-12 Cruiser	1	
Beech 35 Bonanza	3	
Piper PA-24 Comanche	1	
Cessna 180	1	
Cessna 182	4	
Cessna 182B	1	
Macchi MB-320	2	

General aviation, total--Con.		
Charter operators, total--Con.		
Pharazyn Air Charters:		
Beech 35 Bonanza	1	
Piper PA-20 Pacer	1	
Geoffrey Baker, Ltd.--Model 180	1	
T.R.K. Bally--Model 182	1	
Spartan Air Services (E) Ltd.--Piper PA-23 Apache	1	
Locust spraying, total		10
Desert Locust Survey:		
Piper PA-16 Clipper	1	
Auster 5/J1B	1	
DHC-2 Beaver	3	
Airspray (E.A.) Ltd.:		
Piper PA-18A Super Cub	3	
Boeing-Stearman PT-17	1	
Spartan Air Services (E) Ltd.--Taylorcraft 20 Topper	1	
Aerial Surveying, etc., total		2
Spartan Air Services (E) Ltd.--Airspeed AS-40 Oxford	1	
Hunting Aerosurveys (E.A.) Ltd.--Airspeed AS-40 Oxford	1	
Flying clubs (7), total		10
Piper PA-12 Cruiser	4	
DHC-1 Chipmunk	3	
D.H. 82A Tiger Moth	2	
Piper J3C-65 Cub	1	
Private services, total		32
Business flying, total		25
Flight instruction, total		2
Campling Brothers and Vanderwal--DHC-1 Chipmunk	1	
Caspair Air Charters and Agencies, Ltd.--Piper J3C-65 Cub	1	
Government, total		9
Police Air Wing--Cessna 180	8	
Directorate of Civil Aviation--De Havilland 114 Heron	1	
Tanganyika, Uganda, and Zanzibar[2], general aviation:		
Tanganyika, total		8
Government, monmilitary:		
Percival P.50 Prince	3	
Williamson Diamonds, Ltd., total	3	
De Havilland 104 Dove	1	
DC-3/C-47	1	
Cessna 180	1	
Colonial Pesticides Research Unit--Auster J5/c	1	
Private service--Cessna 180	1	
Uganda Police Air Wing--Cessna 180-A		1

[1]The Kenya register includes all of the private planes operated in Uganda and some of those owned and operated in Tanganyika.

[2]Zanzibar has no local aircraft registry.

Equatorial Africa

(Republics of Gabon, Congo, Chad and Central Africa)

The Gabon Republic, the Congo Republic (not to be confused with the Republic of the Congo, the former Belgian Congo), the Central African Republic, and the Chad Republic were formed in 1958 out of the Federation of French Equatorial Africa as separate and independent member States of the French Community. The four Republics gained full independence during August 11-17, 1960.

The Republics together occupy an area one-third the size of the United States, over 969,000 square miles, in the heart of Africa. The coastal regions, and to a lesser extent, the area along the equator, are covered by dense and swampy forests. The coastal lowlands are separated from the central plateau by formidable mountains. To the north, the forests fade to brush and finally desert land forming part of the Sahara. The total combined population is about 5 million, and agriculture is the principal occupation.

ROLE OF AIR TRANSPORTATION

Air transportation facilities have been well developed because the impediments of the terrain and the great distances between population centers have kept surface transportation prices high and facilities meager. All the cities and large towns are served by passenger and freight flights. Regular scheduled flights connect the principal cities with other African territories, and through Europe with the rest of the world. Considerable quantities of goods in international transit to the Republics are transported by air, the international airport in Brazzaville, Congo Republic, serving as a refueling and repair center for Air France, Royal Dutch Airlines (KLM), and *Union Aeronautiques des Transport* (UAT). Fields are being expanded to accommodate the jet transports of the international flag carriers. Air traffic, both domestic and international, has increased greatly in recent years.

AIRCRAFT IN USE

Of the 29 civil aircraft registered in the four Republics, 23 are in commercial use and the others are privately owned or operated by flying clubs. Most of the aircraft in use are U. S.-made light utility planes.

COMMERCIAL AIRLINES

Service

Four foreign flag carriers provide the Republics with international air service through the local international airports. Internal commercial services are furnished by 3 Gabonese firms and 1 Congo Republic firm. These four firms own and operate 23 aircraft, of which 16 are U. S.-made utility types, 4 are British-made twin-engine light transports, 1 is a Canadian utility model, and 2 are French 6-seaters.

Disposal and Reequipment Programs

The local companies have no immediate disposal or replacement plans. Business expansion and requirements will determine future programs. One of the Gabonese firms has ordered a French 4-place helicopter. If economic expansion continues, air carrier activities should expand accordingly, generating demand for light transport aircraft. Despite the presumption that French aircraft would be favored owing to historical ties, local operators have purchased mostly U. S. planes because they are more readily available and better suited to present requirements.

GENERAL AVIATION

About 6 aircraft, mostly new U. S. light planes and pre-World War II French planes, are being operated by private owners and flying clubs. The four commercial airlines provide charter and air taxi services in addition to their scheduled service. The growth of these activities will depend entirely on the success of the Republics' economic development programs.

MARKET POTENTIAL

The Republics do not offer a market for sales of U. S. surplus four-engine piston aircraft at this time. Their long-distance requirements are adequately met by foreign flag carriers, and their economies are not yet able to support competitive operations. Local air carriers may require perhaps 6 light transport aircraft, either single-or twin-engined, for combination freight/passenger services as their activities expand and as increased capacity becomes necessary to serve a growing economy. No import duties are imposed on aircraft and major aircraft component purchases from the United States.

Equatorial African Civil Air Fleet—29

Commercial airlines, total		23
Compagnie Aerienne J. C. Brouillet, Gabon Republic, total		7
De Havilland 89A Dragon	3	
Norseman UC-64A	1	
Piper PA-18150	1	
Cessna 180	2	
Societe da Haute-Ogooue, Gabon Republic, total		3
Piper PA-1850	1	
Piper PA-18135	1	
Piper PA-22 Tri-Pacer	1	
Air Gabon, Gabon Republic, total		12
Max Holste 1521	2	
De Havilland 89 Dragon	1	
Cessna 170B	7	
Piper PA-18150	2	
Transports Aeriens du Congo, Congo Republic, U.S.-made utility aircraft		1
General aviation, private service and flying clubs (no breakdown available)		6

Ethiopia

ROLE OF AIR TRANSPORTATION

The Empire of Ethiopia covers almost 480,000 square miles, the size of Texas, New Mexico, and Oklahoma combined, and has about 18 million population. Domestic air transport is of unusual importance to the country. Because of the varied terrain, many places are completely inaccessible by road and others are inadequately served by existing surface transportation systems. Of equal importance is international air service, to link the country's agriculture-based economy with world trading areas and as an important source of national revenue. The national airline, wholly owned by the Ethiopian Government, provides a well-developed internal passenger/freight service and a scheduled international service, as well as almost all of the nonscheduled cargo and passenger services.

Air traffic within and through the country has increased substantially in recent years, and the Government is extremely interested in the addition of regular scheduled trans-African services to complete its air network. The airline plans to acquire jets for this service in order to maintain its competitive position on its international routes. Runways at two of the country's international airports are already being extended to accommodate the eventual jet operations.

AIRCRAFT IN USE

The 19 aircraft in commercial operation, all of which are U. S. made, are owned by the national airline. The few other civil aircraft registered, probably about 6, are either privately owned or in semi-Government use.

COMMERCIAL AIRLINES

Service

Commercial scheduled and nonscheduled air operations are provided by the Government-owned national flag carrier, Ethiopian Air Line, Inc. (EAL). A U. S. airline serves EAL in an advisory and managerial capacity under the terms of a contract between it and the Ethiopian Government. The EAL fleet comprises 3 four-motor and 11 twin-motor transports, and 5 helicopters. The line operates regularly scheduled passenger and freight service to about 30 points in the Empire. It has operated at a profit in recent years, the largest share of the revenue being produced by its international services, mainly the European route to Frankfurt, West Germany.

Four foreign flag carriers from neighboring territories now furnish scheduled international air services into or through Ethiopia by way of Asmara. International traffic through Addis Ababa has been provided entirely by EAL, although recent bilateral agreements have opened the way for competitive operations by European flag carriers.

Of the 7 international and 28 national or local airports in operation, several are scheduled to be improved in the near future. A maintenance and overhaul base, including an engine overhaul shop, operated by EAL at Addis Ababa is equipped to undertake all engine services for its present fleet.

Disposal and Reequipment Programs

No definite plans have been reported for sale or disposal of aircraft by EAL, although 3 of its older twin-engine planes in the CV-240 series may be retired in the near future. Although plans have not yet been completed, EAL has been considering the replacement of some of its DC-3's with turbine-powered equipment and is negotiating for the eventual purchase of jet aircraft to replace its DC-6's on trans-African and expanded international routes. The displaced aircraft would be transferred to internal and interterritorial services to expand present capacity. U. S. equipment appears to be preferred owing to favorable past performance, as well as the availability of maintenance services and personnel familiar with U. S. aircraft.

GENERAL AVIATION

Other than that provided by EAL, little, if any, commercial air transportation is available. Private flying is negligible, only 6 light aircraft being in operation. Two of these are Cubs operated by the Ethiopian Government Locust Control Program; two are owned by private parties and used occasionally for business flying; and two are Super Cubs used in the National Airlines Training Program, a Government project to train Ethiopians for positions with EAL.

MARKET POTENTIAL

EAL's expansion plans call for the acquisition of turbine- and jet-powered aircraft, ruling out any immediate market for U. S. surplus piston-engined planes. EAL's customary close and satisfactory relationship with the United States would justify the assumption that it will make its new purchases from U. S. manufacturers. The use of light aircraft, which has been hampered by geographical factors, should increase as new airport facilities expand and facilitate internal services and open more of the interior areas to air traffic by individuals and businesses. This increase in commerce should create a good potential market.

No import duties are imposed on aircraft and parts.

Ethiopian Air Lines, Inc., (EAL), total	19
DC-6B	3
Convair 240	3
DC-3/C-47	8
Bell 47J Helicopter	4
Bell 47G Helicopter	1
General aviation, total	6
Private service:	
Auster V-5	1
De Havilland 89A	1
Government:	
Piper Cub	2
Piper Super Cub	2

Federation of Rhodesia and Nyasaland

ROLE OF AIR TRANSPORTATION

The Federation of Rhodesia and Nyasaland, whose land area is almost 500,000 square miles and population more than 7.6 million, relies heavily on aviation for transportation and communication. Although railroads are still the basic transport medium and road networks are gaining importance, air operations play an essential role in the country's economy. Local services connect the widely separated population centers and extend vital communication and transportation lines into sparsely settled, remote areas. Regional and international services link the country with its trading partners, and enable access to its landlocked location by Europe, South Africa, and the United States, those countries with which it has the closest ties and most frequent contacts.

The Federation, comprising Southern Rhodesia, Northern Rhodesia, and Nyasaland, although self-governing to some degree, is recognized as U. K. territory for certain purposes, including international air transport. A treaty between the Governments of the United Kingdom and the Union of South Africa, approved by the respective local Governments, gives their flag airlines the privileges of national carriers within the Federation. The long-range future of air transportation depends upon the degree of expansion of the Federation's overall economy. In the past 5 years, both passenger and cargo traffic originating in the Federation have increased steadily. Northern Rhodesia has sizable deposits of copper and hydroelectric power resources. In Northern and Southern Rhodesia, the climate and the land favor greatly increased agriculture. Nyasaland is the least developed part of the Federation, most of its surplus labor being employed in the mines, industry, and agriculture of the other two territories.

AIRCRAFT IN USE

About 128 civil aircraft were registered in the Federation at the end of 1959. Of these, 73 were American makes, including 4

DC-3's and 2 rotary-wing aircraft, and the rest British. Commercial air carriers operated 18 transports, including the DC-3's; charter services and businesses operated about 46 aircraft, including 8 twin-engine light transports; and the remaining registered aircraft were either privately owned or operated by the 10 flying clubs.

COMMERCIAL AIRLINES

Service

The Federation's national airline, Central African Airways (CAA), is operated by the Government-owned Central African Airways Corporation (CAAC). CAA operates 11 aircraft on scheduled services, its longest and most important operation being a twice-weekly coach service between the Federation and the United Kingdom using Viscount 748's. However, CAA concentrates on providing high-frequency services between the larger centers of the Federation, local services to remote areas, and regional services linking the Federation with its neighbors. The main routes utilize Viscounts and DC-3's, and the outlying areas are joined to the main internal system by feeder services using 5-passenger De Havilland Beaver aircraft. In addition to its passenger services, CAA's air-mail operation is also a substantial revenue-producer. Its air-freight service has been steadily expanded, although it does not operate any all-cargo equipment.

Internal scheduled services have also been maintained by Hunting-Clan African Airways (Pvt.) Limited, using 2 DC-3's, and Commercial Air Services (Rhodesia) (Pvt.) Limited, using 1 twin-engine 5-passenger plane and four 4-passenger aircraft.

Eight foreign flag carriers also service the Federation, linking it with Paris, Rome, London, and the main commercial centers of South Africa.

Only one airport in the Federation can handle the larger jet aircraft, such as Comet IV's, DC-8's, and "707's," but new facilities are being built and existing ones modernized.

Disposal and Reequipment Programs

CAA reports no plans for retirement of its operating equipment. Hunting-Clan was to have ceased its scheduled services in the Federation in December 1959, but its aircraft were to have been transferred to its other affiliates for charter and sightseeing operations in the area.

The carriers have no firm plans for the acquisition of new aircraft in the near future. Eventually, CAA would consider a replacement for its DC-3's, but its current requirements for a durable plane able to operate out of the Federation's small fields carrying small loads are being adequately met by its present fleet. Inasmuch as the Federation is directed in part by the United Kingdom and CAA receives a subsidy from the Federal Govern-

ment, British types of equipment will probably be favored, although U. S. equipment is highly regarded because of its satisfactory performance. The recent removal of import duty from almost all classes of aircraft should facilitate the increased use of aircraft in the countries.

GENERAL AVIATION

About 110 aircraft, 64 of which were U. S. makes, have been in use for general civil aviation purposes, including charter flights, aerial survey and photography, crop spraying, and private flying. Some 13 operators, including the 3 commercial carriers, are licensed for charter operations. The purely charter firms have 28 aircraft registered. Of the remaining registered aircraft, flying clubs operated 19, business firms 19, the Federation Governments 3, and private parties 41. Activity in these fields has not increased significantly.

The growth potential of general commercial flying is directly tied to the economic development of the Federation. Rapid transportation into, and communication with, all underdeveloped sections can be achieved only through air services.

MARKET POTENTIAL

Although some DC-3's will continue to be in demand by the commercial carriers, practically no market exists for other U. S. surplus, piston-engined aircraft. A small market will continue to exist, as the economy develops, for fast, light, twin-engine and general-purpose utility aircraft, but U. S. manufacturers will have to overcome the competitively preferential position of the U. K. suppliers. On the other hand, the Federation enjoys a favorable balance-of-payments position with the United States and has substantial financial resources, enabling it to afford more imports from the United States. More strenuous promotional efforts on the part of U. S. business could well raise the level of sales.

Federation of Rhodesia and Nyasaland Civil Air Fleet—128

Commercial airlines, total		18
Central African Airways:		
De Havilland Beaver DHC2	5	
Vickers Viscount 748	4	
DC-3	2	
Hunting-Clan:		
DC-3	2	
Commercial Air Services (Rhodesia) (Pvt.) Ltd.:		
Cessna 180	2	
Cessna 195	2	
Cessna 310B	1	
General aviation, total		110
Charter operations, total	28	
Rhodesia, Nyasaland Air Charter:		
Beech D 17S	1	

Commercial airlines--Con.

Air Carriers (Pvt.) Ltd.:	
Piper PA-22	2
Piper PA-23	3
Zambesi River Transport Services:	
Piper PA-22	2
Northern Rhodesia Aviation Services:	
De Havilland Dove DH 104	2
Zambesi Airways:	
Piper PA-22	1
Skywork (Pvt.) Ltd.:	
De Havilland Tiger Moth	2
Avro 19	3
Cessna 180	2
Cessna 310 B	2
Flights (1956) (Pvt.) Ltd.:	
De Havilland Beaver	1
Cessna 180	1
Airlift (Pvt.) Ltd.:	
Fairchild 24 W	1
Victoria Falls Airways (Pvt.) Ltd.:	
De Havilland Rapide 89A	3
Aircraft Maintenance and Overhaul Services (Pvt.) Ltd.:	
Piper PA-22	1
De Havilland Tiger Moth	1
Business flying (18 firms):	
Utility aircraft, including 2 rotary-wing, 1 twin-engine	19
Government, nonmilitary:	
Utility aircraft	3
Private service:	
Utility aircraft	41
Flying clubs (10):	
Utility aircraft	19

Ghana

ROLE OF AIR TRANSPORTATION

Ghana, whose land area totals 92,000 square miles and population 5 million, formally proclaimed itself a Republic as of July 1, 1960. It is the world's leading cocoa producer, has good reserves of natural resources, and has developed plans for crop diversification and industrialization. This country plays a major role in African aviation because its centrally located modern air facilities provide an ideal stop on through flights from Europe down the west coast to South Africa. Furthermore, it contributes a substantial volume of traffic by connecting the transport systems of its neighbors with international services. A steady flow of Government, trading, and technical groups enters and traverses Ghana by air. Commercial air freight shipments to and from the country have been increasing. Diamonds are the chief export product

consistently carried by air, and gold bullion, another major export, is also carried by air to a considerable extent.

Domestic air travel is much less important than international in the country's economy. The well-developed highway network and extensive cargo trucking and passenger facilities have limited the importance of internal air transportation. However, the proposed construction of landing strips at many interior cities should extend services and facilitate the expansion of air traffic.

The Ghana Government is active in civil aviation both as the operator of the national flag airline and as the regulator of foreign-flag airline traffic through the international airport of Accra. The Government is particularly interested in the services linking the countries and territories in West Africa, and in the national airline's access to the European routes through Barcelona.

AIRCRAFT IN USE

Only 6 aircraft are registered in Ghana, 4 being owned by the national airline, 1 by a business firm, and 1 by the Government. The fleet includes 2 DC-3's and 1 Model PA-18 Super Cub.

COMMERCIAL AIRLINES

Service

Ghana formed its own national flag airline, Ghana Airways, Ltd., in 1958 in collaboration with British Overseas Airways Corporation (BOAC). BOAC owns 40 percent of the firm, and the Ghana Government owns 60 percent and is buying out the BOAC interest. The civil aviation policy to be followed after the change in ownership provides for retention of agreements with BOAC for management and technical assistance, reorganization and expansion of the airline and its facilities, and expansion of internal and international routes. Ghana Airways is now operating 2 De Havilland Herons and 2 DC-3/C-47's on West African and internal routes, and 1 Britannia (leased from BOAC) for service between Accra and London.

In addition to Ghana Airways, seven foreign flag carriers provide regular services into and through Ghana.

Disposal and Reequipment Programs

The modernization plans of Ghana Airways do not call for the disposal of any aircraft in the present fleet. Any displaced aircraft will be retained in the fleet and transferred to other services. The fleet-enlargement program is designed to fortify the airline's competitive position in West Africa and increase the seating capacity available for an expanding internal service. One Britannia has been ordered to replace the one on charter from BOAC in the Accra-London service. Also on order are three Viscounts for use on the West African coastal routes between Lagos in Nigeria,

and Dakar in Senegal, and on a proposed new service between Accra and Beirut, Lebanon. Two more DC-3's have been ordered from a British firm and these, together with the two on West Coast routes being displaced by the Viscounts, will be used on internal routes. The Herons now in use on these routes will be available for private charter work and special Government requirements.

The demonstrated preference for British equipment indicates that the Ghana Government has been satisfied with BOAC's guidance in technical and operational matters.

GENERAL AVIATION

Nonscheduled air traffic is so far of minor importance, although the expansion of Ghana Airway's fleet will provide additional capacity for such services. Only 2 private planes are now registered, one belonging to the Government and the other to a trucking firm.

MARKET POTENTIAL

The present fleet expansion program will probably satisfy Ghana's air service requirements for some time. The market will probably be limited for U. S. surplus piston-engine aircraft because of the preference for turboprop equipment. Some additional DC-3 type planes may eventually be required if the internal services develop substantially. The opportunity for sales of light utility aircraft is also slight because of the absence of large, new, undeveloped resources and because of Ghana Airways' plans to bring its service into the interior when the new airstrips are completed.

Although Ghana is remaining a member of the sterling area dollar pool, dollar availability has not been a problem in purchasing specialized equipment for the public services. No duties are imposed on imports of aircraft and parts.

Ghana Civil Air Fleet—6

Ghana Airways, Ltd., total	4
De Havilland 114 Heron	2
DC-3/C-47 Dakota	2
General aviation, total	2
Business flying--Commonwealth Hanlage Co., Ltd.:	
Auster NK-V	1
Government, nonmilitary:	
Piper PA-18 Super Cub	1

Liberia

The Republic of Liberia has an area of about 43,000 square miles and a population of over 1 1/4 million. Its topography is characterized by rolling uplands drained by many short rivers, some highlands forming coast promontories, and a narrow coastal lowland. The economy is basically agricultural, but considerable trade in rubber and iron ore is carried on with the United States.

ROLE OF AIR TRANSPORTATION

Air transportation is of prime importance to the economy. Although cargo is carried almost exclusively by ship, the lengthy travel time between Liberia and the United States or Western Europe and the scarcity of accommodations on vessels serving the area have caused a shift in almost all international passenger traffic to the air services. The country's relatively easy accessibility by air since World War II has attracted new businessmen and investors and has facilitated the worldwide commercial contacts of the domestic businesses.

Judging by the hearty interest of business and civic groups in each new, long-distance air route servicing the area and the Government and private emphasis on jet runways and aviation facilities improvements, international air transportation has an excellent growth potential. Air traffic to the other West African States has expanded and should have increasing political and economic importance. Domestic aviation has also gained in prominence. Although the developing road network is facilitating motor transportation in the interior, most of the important centers in the coastal provinces are not linked by roads, and they will continue to depend on local aviation for government, trading, and business contacts.

AIRCRAFT IN USE

In 1959, 31 aircraft were registered, including 28 U. S. makes. Except for 2 DC-3's used by the national airline, 1 twin-engine Apache, and 1 helicopter, all were light utility types. The business activities of 5 companies accounted for 18 of the total fleet, but some of these planes were not operable. Nonmilitary, government projects accounted for 3 aircraft and religious missions for 8. No planes are registered for private pleasure flying.

COMMERCIAL AIRLINES

Service

The national flag carrier, Liberian National Airways (LNA), is owned and operated for the Republic's Post Office Department and managed by a U. S. staff. LNA operates 2 DC-3's in a local

service, and it may resume some international service along the West African coast in the near future. Initially subsidized by the Liberian Government, LNA is now financially independent, although Government approval is required for the use of its funds.

The principal airport is being modernized through the International Cooperation Administration (ICA) to accommodate jet traffic in addition to its regular local and international services. In addition, the Government operates and maintains a smaller international airfield and has constructed and maintains a number of other airfields and airstrips on the coast and in the interior.

The following foreign flag carriers also service the country: Pan American World Airways (PAA), Air France, Ghana Airways, and Nigerian Airlines.

Disposal and Reequipment Plans

No firm retirement or disposal plans have been made, although LNA may replace its DC-3's with DC-4's or comparable planes when its West African service is instituted. The DC-3's would probably be retained and transferred to other services. The United States is preferred as the source of the new planes if favorable financing can be arranged.

GENERAL AVIATION

Civil air activities other than carrier operations use 29 aircraft. Of the 5 business firms using a total of 18 planes, 3 are air taxi companies flying light utility aircraft into areas not accessible to LNA's DC-3's. The other 2 firms operate 4 aircraft, including a 5-passenger and a 6-place aircraft. The other 11 aircraft are owned and operated by missionaries. Little pleasure flying is done, and aircraft for this purpose are provided through the local air taxi companies.

MARKET POTENTIAL

The potential market for U. S. surplus piston-engine aircraft is very limited. LNA is the only customer for large planes, and its requirements can be satisfied by 2 DC-4's. The Liberian American-Swedish Minerals Co. may be interested in eventually acquiring a DC-3 and some small planes, but its plans are not firm. Air taxi companies, missionaries, and business firms will continue to require new and replacement utility aircraft, but their operations are quite small and their financial resources limited.

The United States long has been a preferred supplier. U. S. aircraft, especially light utility types, will probably continue to dominate the market, although European manufacturers may offer increasing competition.

Liberian National Airways (LNA):		
DC-3		2
General aviation, total		29
Business flying, total		18
Datco Air Taxi Co.:		
Piper Apache	2	
Piper Tri-Pacer	4	
Liberian Air Taxi Co.:		
Piper Tri-Pacer	4	
Piper Cub	1	
Cessna 170	1	
DOT Air Taxi Co.:		
Piper Tri-Pacer	1	
Menowing (German)	1	
Le Tourneau Co.:		
Cessna 195 (5-place)	1	
Piper Pacer	1	
Liberian American-Swedish Minerals Co.:		
Helicopter	1	
6-passenger plane	1	
Religious missions, total		8
Piper Tri-Pacer	3	
Piper Cub	4	
Cessna 182	1	
Government, nonmilitary, total		3
Piper Pacer	1	
Cessna Model 170	1	
Piper Cub	1	

Libya

The Kingdom of Libya occupies more than 679,000 square miles of almost completely semiarid terrain, and has a population of over 1.1 million.

ROLE OF AIR TRANSPORTATION

Libya's economic growth hinges primarily on the exploitation of its developing oil industry, and the increasing requirements of this industry will determine the rate of air service expansion. Air transport will be practically indispensable because of the wide areas to be traversed and the dearth of other suitable transport media. The industry's present large air charter requirements are being adequately met by the foreign operators of the country's civil air transport system. In the absence of a national airline, commercial air operations are carried out by a large number of foreign airlines. These lines are granted operating permits by the Directorate of Civil Aviation, a division of the Ministry of Communications and the agency bearing the administrative and supervisory responsibilities for civil aviation control. International commercial carriers handle practically all of the passenger

traffic, while nonscheduled foreign charter lines or individual companies carry most of the air cargo.

No aircraft are registered in Libya.

COMMERCIAL AIRLINES

Serivce

Although Libya has no flag airline at present, Air Libya Ltd. (LIBIAVIA), 60 percent owned by Libyan interests and 40 percent by French, is authorized to operate on domestic routes and has secured permission to extend its services to Rome, Cairo, Tunis, Athens, and Ankara. LIBIAVIA services a Tripoli-Athens-Ankara route with DC-6B aircraft chartered from and operated by the *Union Aeromaritime des Transports* (UAT) of France. It recently purchased a DC-4 from UAT for use on two domestic routes beginning in the fall of 1960. UAT is also supplying the aircraft personnel and ground crew supervision.

Air traffic has increased significantly since 1955. The petroleum companies account for almost 80 percent of both the incoming and outgoing air freight. The Government is still considering proposals by various foreign groups to join in the establishment of a domestic airline.

Disposal and Reequipment Programs

Inasmuch as the civil aircraft based in or operated from Libya are not locally owned, any replacements or additions would be negotiated through the home offices of the respective organizations. If a national airline is formed, its aircraft would probably be furnished by whatever foreign airline participates in the venture.

GENERAL AVIATION

Civil air activities other than commercial are limited to charter activities conducted by or on behalf of the petroleum exploration and development companies. No flying clubs or private pleasure-flying activities are known to exist.

MARKET POTENTIAL

Libya offers no market for surplus piston aircraft sales. However, if the Government decides to purchase any aircraft in the future, U. S. planes would be among those considered. Import duties on aircraft and parts range from 20 to 25 percent, plus a surtax of 5 percent of the normal customs duty assessed.

Malagasy Republic

The former French Overseas Territory of Madagascar became the independent Malagasy Republic on June 26, 1960, although it is remaining a member of the franc zone. The island Republic covers an area of about 228,000 square miles, almost twice the size of Arizona, and has a population of over 4.5 million. It is mostly a high plateau, low areas in the south being broken by prominent mountains that rise to 8,000 feet in the central area. The principal occupations are agriculture and stockraising.

ROLE OF AIR TRANSPORTATION

Transportation is not developed. Few rail lines penetrate the interior, roads are mostly inadequate, shipping is mainly concentrated in coastal activities, and only two regular airlines serve the country. Development of transportation and of the overall economy is hampered by geographical factors. A better transportation system could materially aid economic development.

Aviation activities in addition to the regular service include some aerial crop dusting, air taxi operations, and private flying.

AIRCRAFT IN USE

Of the 115 civil aircraft in operation, the scheduled airlines account for 19. A business firm uses 13 for crop dusting and air taxi services; the flying clubs own some 57 light craft; business or pleasure flying accounts for 20 small planes; and nonmilitary Government use for 6 aircraft, including 2 helicopters. Of the total fleet, 52 aircraft are U. S. makes, including 1 DC-4 and 11 DC-3's; and, except for 1 Czechoslovakian and 2 Belgian planes used by flying clubs, the remainder are about half British and half French makes.

COMMERCIAL AIRLINES

Service

Air France and Air Malagasy are the only local scheduled airlines. The latter is an almost wholly owned subsidiary of the French *Compagnie de Transports Aeriens Intercontinentaux* (TAI) and the steamship company *Messageries Maritimes*. These two airlines provide service to 61 of the 85 airports in Malagasy. International services are provided by foreign flag airlines.

Disposal and Reequipment Programs

Air Malagasy's 6 De Havilland Rapides were to have been withdrawn from service after April 1960, but the company announced no plans for their disposition or for replacing its 4 DC-3's. Air France may replace some of its 6 DC-3's when airports have been improved to accommodate larger aircraft.

The rudimentary condition of the airfields hampers the airlines' plans to reequip. Air Malagasy believes its needs would be met by a light plane able to carry a cargo of 3,300 pounds and operable on unsurfaced airstrips less than 3,000 feet long. The company prefers U. S. planes. Air France is reportedly considering DC-4's as eventual replacements for its 6 DC-3's. They can be supplied from the company's own general fleet. Air France would probably give preference to French manufacturers if its present equipment is replaced with new models.

GENERAL AVIATION

Of the 96 civil aircraft owned and operated for other than scheduled commercial use, 40 are U. S. makes, including 1 DC-3 used by the Malagasy Government. Some 21 flying clubs operate 57 planes, businessmen, 6, and private owners 14, U. S. makes accounting for 15, 3, and 5, respectively. *Travaux Aeriens de Malagasy*, headquartered in France, has 13 aircraft in Malagasy used chiefly for crop dusting, air taxi, and charter flights. Its operations are not extensive and, although some of these planes are quite old, it has mentioned no firm plans for replacing them.

MARKET POTENTIAL

Although the country offers a small market for light utility aircraft for general use and suitable planes for Air Malagasy, sales of U. S. aircraft will continue to be hampered by restrictions on imports from the dollar area and by preferential treatment afforded French suppliers.

Malagasy Republic Civil Air Fleet—115

Commercial airlines, total		19
Air France:		
DC-4	1	
DC-3	6	
Air Malagasy:		
DC-3	4	
De Havilland 89A Rapide	6	
Max Holste 1521C	1	
Cessna 170B	1	
General aviation, total		96
Travaux Aeriens de Malagasy (TAM):		
Piper PA-11 Cub	2	
Piper PA-18 Super Cub	8	
Piper PA-20	1	
Piper PA-22	2	
Government:		
Helicopter 360 UH	2	
DC-3	1	
Cessna UC-78	1	
Cessna 180B	1	
Chipmunk T.10	1	

Malagasy Republic Civil Air Fleet—Con.

General aviation--Con.	
Flying clubs, business flying, and private service:	
Jodel	21
Chipmunk T.10	16
Piper PA-18	4
Piper PA-11	2
Piper PA-20	1
Piper PA-12	1
Piper PA-15	1
Cessna 172	1
Cessna 170B	6
Cessna UC-78	3
Piper J3C	1
Cessna 195	2
Cessna 150	1
Cessna 182	1
Auster	5
Stampe	2
Miles Gemini	1
Brochet MB 101	1
N1.203 Norecrin	2
Sokol Mid	1
N.C. 858	1
Leopoldoff	1
Boisavia B602	1
Aubert	1

Morocco

The Kingdom of Morocco has a population of more than 10 million and a land area of about 174,000 square miles. The area is characterized by a relatively narrow coastal plain and three ranges of the Atlas Mountains, including the intervening plateaus.

ROLE OF AIR TRANSPORTATION

Domestic air transportation is far less developed than surface transportation and is of minor importance to the national economy. An adequate road system serves the entire country, and private car travel is preferred inasmuch as distances between population centers are not great. Rail travel is economical, whereas air rates are beyond the means of many of the people. On the other hand, international air travel has been growing in favor, and is expected to expand further.

The Government has had control of civil aviation since Morocco became independent in March 1956, although France retains the technical control of civil aviation facilities.

AIRCRAFT IN USE

The latest information shows 46 registered aircraft, although a large number of planes in use have not yet been included pend-

ing their transfer from the French Air Register. Almost 30 percent of the officially registered aircraft are of U. S. manufacture. The 76 aircraft comprising the actual operating fleet include 43 U. S. makes, of which 1 is a Constellation, 4 are DC-4's, and 4 are DC-3's. All but 30 of the fleet are in some form of commercial service.

COMMERCIAL AIRLINES

Service

The only national flag carrier, *Royal Air Maroc*, was formed in 1957 and combines both Government and private interests. Through an agreement with the Government, this firm was granted a monopoly of all scheduled air routes within the country. It owns and operates 3 DC-3's on domestic routes and on certain routes between Morocco and Spain, 4 DC-4's on most of its international routes, and 1 Constellation for international traffic. *Air Maroc* has close financial and business relations with Air France. In addition, 8 foreign flag carriers operate services to and from Morocco.

Disposal and Reequipment Programs

Air Maroc reportedly is planning the retirement of its DC-4's from international routes, although these aircraft will probably be transferred to some other service.

Air Maroc's expansion plans depend partly on Government policy and budgeted funds. Doubtless the firm will try to develop operations to Spain, Portugal, France, Germany, and Tunisia. It ordered two Caravelle twin-engine jets, the first to have been put in service in the summer of 1960. The DC-4's removed from international services are expected to be replaced with Constellations. Very few additional new aircraft are scheduled to be acquired because a large increase in internal air transportation is not anticipated, and furthermore, *Air Maroc* is approaching the 50-percent share of total passenger traffic between Morocco and France to which it is entitled under its agreement with France.

GENERAL AVIATION

The principal air activity other than commercial transportation is crop dusting for locust control. Aircraft are also used by mining companies for the transportation of personnel and equipment. Of the 27 planes used by the five companies in these operations, all but 5 are U. S. makes, and they include 5 twin-motor light transports and 1 DC-3.

Private flying is quite developed, especially among the European population. About 16 flying clubs are in operation and a Government agency has organized instructional flying. The royal family owns 3 aircraft, including 2 Twin-Bonanzas.

MARKET POTENTIAL

Prospects are not favorable for sale of U. S. surplus piston engine aircraft in Morocco because the fleet in international operations is being converted to jets, and any piston aircraft replacements are available from Air France. A market for additional light utility aircraft may develop, depending on the progress of general aviation. Private flying is of interest primarily to the French residents, and business flying, except that carried on by Government agencies, is not expected to increase significantly.

Moroccan Civil Air Fleet—76

Air Maroc, total	9
Sud Caravelle	[1]1
Constellation	1
DC-4	4
DC-3	3
Business flying, total	37
Agricolavia (crop dusting):	
Piper PA-18 Cubs	10
Piper Cub J3	2
Auster	1
Anson	1
Aerotechnique (crop dusting):	
Piper Cubs	6
Auster	1
Broussard	1
Cyrafrique (commercial flying and repairs):	
Helicopter	1
Piper Cubs	5
Auster	1
Omnium Norse-Africain (mining prospecting transport):	
DC-3	1
Beech Super 18	2
Cessna 310	1
Beech Bonanza	1
Societe Auxiliaire de Transport:	
Aerien an Maroc (aircraft sales agent):	
Beech Super 18	2
Cessna 310	1
Private Service, total	30
D.H. Heron	1
Beech Twin Bonanza	2
Jodel	17
Stampe	4
Miles Messenger	1
SNCAN (made in Algeria)	1
Moroccan-made	2
U.S.-made	2

[1]To have been delivered sometime in summer of 1960.

Mozambique

The Portuguese Overseas Province of Mozambique, on Africa's east coast, has a total area of over 303,000 square miles, about twice the size of California, and a population of 6 million. Its broad, flat, coastal lowland is broken by mountain masses merging westward into a gradually rising plateau.

ROLE OF AIR TRANSPORTATION

The public transportation facilities are all under the supervision of the Mozambique Administration of Harbors, Railways and Transport Services. Except for one railway owned by the Portuguese Finance Ministry and another that is British capitalized, the railways, harbors, airlines, and most of the highway transport are owned and operated by the Government, which also operates many repair and maintenance facilities, including a workshop for aviation equipment. The Province has a well-developed surface transportation system that provides internal and international freight and passenger services. The national airline has a network of daily services between the principal cities, as well as international and occasional charter operations. Air services are gaining importance in the overall transportation network. Civil aviation activities are supervised by the Aeronautics Council, seated in Lisbon, Portugal. To assist the expansion of the Province's economy, the Portuguese Government has undertaken a development program, including the improvement of transportation facilities.

AIRCRAFT IN USE

The 20 registered aircraft, all owned and operated by the national airline, include 6 U. S.-made twin-engine transports.

COMMERCIAL AIRLINES

Service

The only local commercial air carrier is *Divisao de Exploracao dos Transportes Aereos* (DETA), the Government-owned national airline. Its 20-plane fleet consists of 3 DC-3's, 3 L-18 Lodestars, 2 Junkers 52, and 12 De Havilland aircraft, namely 6 Doves, 4 Rapides, and 2 Moths. DETA operates internal, international, and charter services. Some of its international flights are in participation with South African Airways and Central African Airways (Federation of Rhodesia and Nyasaland). Several other foreign flag carriers also operate scheduled flights to and from the Province. DETA's share of total passenger and freight traffic in Mozambique has been rising steadily, and the line's services will probably be expanded as new equipment is added and the airports are improved.

Disposal and Reequipment Programs

DETA plans to sell its 3 Lodestars, 1 or 2 of its Doves, 1 Rapide, and the 2 Junkers when delivery is made of the turboprop equipment on order. Because the Junkers may not be saleable, DETA is considering their transfer to low-cost internal services. The 3 new Fokker F-27 turboprop aircraft being acquired by DETA are expected to satisfy air transport requirements for several years.

GENERAL AVIATION

Little or no flying is done other than that by the national airline. No business firms are large enough to require executive aircraft, and DETA's charter services probably satisfy the occasional demands for air taxi service or private flying.

MARKET POTENTIAL

The possibility of U. S. sales of surplus piston-engined aircraft is very remote. DETA is rapidly converting to turboprop equipment in order to maintain its competitive status in international services. An estimated 90 percent of the aircraft spare parts and accessory equipment owned by DETA are of U. S. manufacture. The airline's funds for aviation purchases are controlled through Lisbon, and foreign exchange is obtainable.

Very few of the people are financially able to acquire their own aircraft, so the market for U. S. light planes is restricted. However, increased activities by the few local flying clubs may result in demand for some U. S. light, utility aircraft.

No import duties affect aircraft and parts, although a 1-percent general tax, and a 7-percent surtax are levied.

Mozambique Civil Air Fleet—20

DETA (Divisao de Exploracao dos Transportes Aereos):	
DC-3	3
Lockheed L-18 Lodestar	3
De Havilland Dove	6
De Havilland Rapide	4
De Havilland Moth	2
Junkers 52	2

Nigeria

The former British colony of Nigeria has the largest population of any country in Africa, 32 million, and a land area of almost 340,000 square miles. Mining and agriculture are the principal economic activities.

ROLE OF AIR TRANSPORTATION

The country, which became independent in October 1960, offers a very favorable potential for the growth of commercial aviation. A national airline, formed in October 1958 in partnership with British Overseas Airway Corporation, (BOAC) and a British shipping firm, provides internal, inter-African and international services under the jurisdiction and control of the Ministry of Communications and Aviation. Surface transportation is not yet fully developed, so these air services should become increasingly important to the country's growing economy. The expanding internal services will provide communication between the provinces and the seat of Central Government, as well as quick and direct access to the country's resources. Furthermore, Nigeria can become very influential in African aviation because of the strategic geographical location at Lagos of its main airport, which can serve as a terminal for trans-African services and a connecting midway stop for air routes down the west coast of Africa.

AIRCRAFT IN USE

Of 33 civil aircraft registered, 16 are operated by the national airline, 5 are owned by the Federal and local governments, 1 is used by a flying club, 4 are privately owned, 6 are operated by missions, and 1 is owned by a business firm. Another 13 aircraft, including 5 helicopters, are registered in the United Kingdom but operated regularly in Nigeria. Only 10 of the total aircraft registered or operated in Nigeria are of U. S. manufacture, all the others being British. Three of the Nigerian-registered and 2 of the U.K.-registered aircraft are twin-engine light transport or utility planes; the other fixed-wing aircraft are light utility models.

COMMERCIAL AIRLINES

Service

The West African Airways Corporation, (WAAC), Nigerian Ltd., also known as Nigerian Airways, the commercial flag airline, serves all of Nigeria and operates flights to London through Barcelona, Rome, Accra in Ghana, Robertsfield in Liberia, and Freetown in Sierra Leone. Plans are in preparation to expand both domestic and international operations and to improve airport facilities throughout the country. The airline owns and operates 8 De Havilland Herons, 1 Dove, and 7 DC-3/C-47's on its domestic and inter-African routes and other domestic services. The Lagos-London route is serviced with Britannias chartered from BOAC. Four of the Herons have not been in regular operation, and the Dove has been used by the Federal Survey Depart-

ment for aerial photography. The company's reaction to suggested all-cargo and air taxi service is unknown.

Eight foreign flag carriers maintain a fairly regular schedule of passenger/freight services.

Disposal and Reequipment Programs

Nigerian Airways has no plans for disposal of the 4 Herons not in regular operation. These planes will probably be retained for use in the proposed expanded domestic services. The 7 DC-3's have recently been overhauled and are expected to be kept in use for at least another 5 years, and thereafter probably replaced with similar types.

The proposed expanded services will probably not require substantial fleet change as long as the out-of-service Herons are available, although an anticipated rise in demand for West African service might lead to the acquisition of several small turboprop aircraft. Eventual replacements will probably be by aircraft similar to the types in use because of the lack of training facilities for flight and service personnel. Historic and organizational ties with the United Kingdom have influenced Nigerian aviation procurement policy in the past, but what direction preferences will take after independence is not clear. No payment difficulties exist except the capital limitations of the company.

GENERAL AVIATION

Private and general commercial flying has been fairly active in recent years, and operations are expected to expand gradually. The 17 aircraft used for other than airline services are owned and registered by private parties, firms, and the local governments. The 13 civil aircraft registered in the United Kingdom and used in Nigeria are operated for crop spraying, and by a petroleum development company. Continued growth is anticipated in aerial crop dusting, communication between the capital and the outlying provinces, business flying between the various branch offices of trading and industrial firms, and private or club flying.

The Lagos Flying Club operates 1 plane, and a newly-organized flying school to be operated near Lagos by the Federal Ministry of Communications and Aviation will work with the Lagos Club to stimulate private interest in aviation.

MARKET POTENTIAL

Prospects for sales of U. S. surplus piston-powered aircraft are slight. The present commercial air fleet will very likely be maintained intact for some time during the reorganization of the Government. Eventually some market may be found for additional DC-3's as replacements for those to be retired or for the Herons. A demand may arise after independence for 1 or

2 surplus, 4-motor transports to replace those chartered from BOAC so that the international services may be maintained as a totally national operation.

The largest potential is for the sale of light utility planes, or possibly helicopters if maintenance is not too much of a problem. Twin-engined planes are especially favored owing to the long distances between adequate airports or airstrips. Aircraft having short takeoff and landing (STOL) characteristics would be preferred.

Nigerian Civil Air Fleet—46[1]

Commercial airlines, total	16
West African Airways Corporation (WAAC), Nigerian Ltd.-- Nigerian Airways:	
De Havilland 114 Herons	8
De Havilland 104 Dove	1
DC-3/C-47	7
General aviation, total	17
Lagos Flying Club:	
De Havilland 82A Moth	1
Missionaries:	
Cessna 170A	1
Cessna 170B	2
Piper Comanche	3
Private service:	
Cessna 170A	1
Auster 55/IB	1
De Havilland 82A Moth	2
Business:	
Piper Comanche	1
Government, nonmilitary:	
De Havilland 104 Dove	1
Piper Apache	2
Auster 5.5G	2

[1] Includes 13 aircraft registered in the United Kingdom and operated regularly in Nigeria, namely 6 Austers for crop spraying, and 5 Westland 5.55 helicopters and 2 Prestwick Twin Pioneers for petroleum development.

Republic of the Congo

The Belgian Congo became the independent Republic of the Congo on June 30, 1960, and the ensuing political and economic upheaval makes impossible any firm analysis of the future of civil aviation in the country. Before the change, the Congo's three air transport lines were all Belgian organizations, and Belgian nationals dominated general aviation activities. The Congo Administration's 25-percent interest in the Belgian national airline Sabena was to be handed over to the new Congo Government after independence.

Civil aviation operations in the Congo developed after World War II and have ranked below surface routes in passenger and freight traffic, but the proportion of passengers transported by air had been increasing. However, most of the travelers were Europeans.

The most recent available information indicated 109 civil aircraft were registered in the Congo, of which 84 were U. S. makes. The 3 commercial carriers owned and operated 56 of these aircraft; flying clubs, 26; private parties, 22; and the Congo Government operated 5, including 2 helicopters, in nonmilitary use.

Somali Republic

The Somali Republic, which came into being on July 1, 1960, encompasses what was Italian-administered Somali and the former colony of British Somaliland. Except in national government, hardly any integration of the two administrations and economies has taken place. The Republic covers an area of some 266,000 square miles, about the size of Texas, and its population of almost 2 million is mostly nomadic. The area, characterized by a step-like topography, has an economy based primarily on animal husbandry and agriculture, the main exports being live animals, skins, and bananas. A certain amount of industrialization is needed for development and diversification of the economy.

ROLE OF AIR TRANSPORTATION

The area has no domestic airline, and the existing transportation facilities are not sufficiently advanced to support economic development. Various basic installations are needed to reduce the costs of importing and exporting.

International services, which are now provided by Aden Airways, Aden, and Alitalia, the Italian flag carrier, will probably have to be expanded along with growing freight and travel flights to far-off European and other African points. There may also be need for a small domestic air service to meet the demands of increasing economic development throughout the area, and increasing Government activities. The airport at Mogadiscio can accommodate four-engine piston aircraft, and its servicing facilities are good.

AIRCRAFT IN USE

Of the 11-plane Somalian fleet, the Italian Air Force operates 3 DC-3's and 2 B-18's for internal administrative purposes, and 1 L-5 and 1 PA-11 for personal flying and training. Two oil development companies operate 1 DC-3 and 3 Model 180's.

The new Somalian Government will probably receive some of the Italian Air Force aircraft, but the acquisition of additional or

replacement aircraft is limited by lack of funds and foreign exchange. Almost all of the planes in use are of U. S. manufacture, and these types would probably be preferred because the operating and maintenance personnel are familiar with them.

Tunisia

Tunisia has a population of about 3.9 million and a 50,000-square-mile area separated by the Atlas Mountains into a fertile north and a semiarid south region.

ROLE OF AIR TRANSPORTATION

A Republic since July 1957, it has a well-developed transportation system furnishing adequate air services within its boundaries and to Europe. A U.S. company provides direct air service weekly. The development of civil aviation has been largely influenced by French participation in administration and operations of the national airline. The scheduled commercial service has been growing gradually, although passenger traffic has not kept pace with freight operations. A federation of Tunisian flying clubs is actively working toward the development of aviation through mass appeal, providing low-cost introductory flights, pilot and technician training, and the promotion of air tours.

As air services both within and into Africa increase, Tunisia will probably enjoy a favorable position as a central point for traffic from Europe to Central Africa and a connecting terminal for trans-African east-west traffic. Expanded internal air services would not only produce revenue, but would greatly assist the country's programmed independent economic development by providing rapid communication between the centers of population and commerce, and rapid movement of products to market.

AIRCRAFT IN USE

About 41 civil aircraft are in operation in Tunisia. Commercial services operate 15 of these planes, private service 1, and the Government 18; Tunisian Aero Club owns 17 planes, only 7 of which were in flying condition at last report. Of the total operational fleet U. S. makes account for 23, including 2 DC-4's and 3 DC-3's. The remainder are 10 British, 4 German, 1 Belgian, and 3 French planes.

COMMERCIAL AIRLINES

Service

The only commercial airline is Tunis Air, a company owned 51 percent by the Tunisian Government and 49 percent by Air France. It has practically daily service to France and weekly flights to Rome and into Libya and Algeria. Passenger and freight

services are provided on domestic routes on both a scheduled and nonscheduled basis. The company's operations have shown a steady increase in recent years. In addition to the local airline, some 4 foreign flag carriers provide regularly scheduled international and inter-African services through Tunisia.

Tunis Air owns 1 DC-4 and 3 DC-3's, and leases another DC-4 from Air France. These aircraft have been in service for about 4 years, and were purchased used.

Disposal and Reequipment Programs

Tunis Air has no firm plans for disposal of any of its aircraft, nor has it confirmed any plans for the replacement of its old equipment or additions to its present fleet. Although it has shown some interest in acquiring jet or turboprop equipment, the high cost of new aircraft and the volume of traffic required to operate them economically raises doubts whether it can support modern equipment at this time. The company's relationship with Air France would favor French manufacturers as a source of supply for new aircraft.

GENERAL AVIATION

Very little private flying is done in Tunisia. One small firm, the *Societe Tunisienne de Reparation Aeronautique et de Construction* (STRAC), operates 10 aircraft for charter, crop dusting, and grain sowing. Its major contracts are with a number of companies engaged in oil exploration or pipeline construction. All of the aircraft formerly owned by individual flying clubs are now grouped in the Tunisian Aeronautical Federation's hangers at Tunis' commercial airport. The Federation operates some 7 aircraft. Only 1 plane is privately owned and still in flying condition.

Societe Tunisienne de Reparation Aeronautique et de Construction plans to sell 3 Austers and 3 Rapides soon, and has set aside funds for the purchase in 1960 of 3 aircraft that must have fixed landing gear, be capable of carrying 8 passengers, and be able to operate from short fields under desert conditions. The Federation may dispose of some of its older aircraft in the coming months, but lacks the finances to acquire more than a few replacements for some time.

The Tunisian Government owns an additional 18 aircraft—the Secretariat of State for National Defense has 4 PA-21's and 2 Tri-Pacers; the National Guard, the rural police force, has 6 PA-18's for use in border patrols; the Secretariat of State for Public Health and Social Affairs has 2 PA-18's used for ambulance work in remote areas; and the Secretariat of State for Agriculture has 2 Austers used in crop dusting, 1 Auster that is not flyable, and 1 Broussard 6-seater used chiefly for official Government travel, although it is also equipped for crop dusting. Several of these agencies have tentative plans for purchasing additional aircraft of the type they are operating.

MARKET POTENTIAL

Sales of U. S. surplus piston-engined aircraft in Tunisia are not likely. Tunis Air would prefer to acquire turboprop or jet equipment in the next few years, but if that is not possible its needs for additional capacity would probably be supplied from Air France's surplus piston fleet. A few sales of light transport aircraft to STRAC or light utility planes to the Federation may be possible if the necessary dollar exchange and liberal financing can be obtained.

No import duties are imposed on aircraft and parts. However, a customs formality tax of not less than 1.65 percent ad valorem, a production tax of 14 percent ad valorem, and a consumption tax of 5-10 percent are levied.

Tunisia Civil Air Fleet—41

Tunis Air, total	5
DC-4	[1]2
DC-3	3
General aviation, total	36
Charter flying:	
STRAC (Societe Tunisienne de Reparation Aeronautique et de Construction):	
De Havilland 89A	3
Dornier 27	4
Auster	3
Flying clubs:	
The Aero Club (Federation Aeronautique Tunisienne):[2]	
Piper PA-18	1
Fairchild F-24	1
Auster	1
Stampe	1
Norecrin	1
Piper PA-17	2
Private service:	
Jodel	1
Government, nonmilitary:	
Secretariat of State for National Defense:	
Piper PA-21	4
Piper Tri-Pacers	2
National Guard:	
Piper PA-18	6
Secretariat of State for Public Health and Social Affairs:	
Piper PA-18	2
Secretariat of State for Agriculture:	
Auster	3
Broussard	1

[1]One leased from Air France.

[2]The Aero Club owns, in addition to the 7 listed, 10 aircraft that are not flyable.

ROLE OF AIR TRANSPORTATION

Sierra Leone, a dependency of the United Kingdom, due for independence in April 1961, has almost no civil aviation. Railroads provide internal transportation for the movement of goods to market, and the port facilities at Freetown are among the best on the African West Coast. Development of full-scale domestic air services is not possible because the country is not large enough to support an interterritorial commercial airline operation, and the tropical rain forest of the interior does not permit the construction of airports.

AIRCRAFT IN USE

About 6 civil aircraft are registered, all of British or Canadian manufacture. Three are owned by a commercial operator, two are used in business flying, and one is privately owned.

COMMERCIAL AIRLINES

Service

The Sierra Leone Government, in conjunction with West African Airways Corp., Nigerian Ltd. (WAAC), operates Sierra Leone Airways, a token scheduled service between the major cities. This service uses 2 De Havilland Rapides, and a third is held to supply replacement parts.

Disposal and Reequipment Programs

The local airline has no plans or program for disposing of any of its active fleet. It has tentative plans to add 2 De Havilland Heron aircraft to the fleet. Replacement equipment will almost certainly be purchased through British suppliers owing to the position of Sierra Leone in the Commonwealth.

GENERAL AVIATION

No air taxi, flight club, aerial photography, or similar activities are carried on. Two De Havilland (Canada) Beavers are operated for business flying, and one 4-place Gloucester is privately owned.

MARKET POTENTIAL

Sierra Leone does not offer a market for U. S. surplus piston-engined aircraft or new light aircraft. When it gains independence in early 1961, one DC-3 type plane may be required for official Government use.

Union of South Africa

The Union of South Africa, a sovereign, independent member of the British Commonwealth of Nations, covers an area of over 472,000 square miles, about one-sixth the size of the United States, and has a population of more than 14 million. Land-bound only on the north, it has a narrow coastal belt and a great interior plateau varying from 3-6,000 feet in altitude.

ROLE OF AIR TRANSPORTATION

The absence of navigable rivers, the long distances between cities, and the impediments in the terrain have made the railroad system essential to the country's transport services. The Government's South African Railways and Harbors Administration (SAR) has a monopoly on rail transport and a virtual monopoly on internal air service, controls all harbor activities, and is the largest single road hauler in the country.

South Africa, the most industrialized and most highly mechanized country in all of Africa, has been building a well integrated transportation system in order to fulfill the present and future transportation needs of its expanding economy. Air services are being increased and modernized. Internal and regional services have been updated by the introduction of turboprop equipment, and international routes planned to have jet aircraft service by October 1960. Civil aviation is actively promoted by the Government, and national prestige demands that high standards of operation be maintained on both the international and domestic routes. A private airline plans a system of feeder routes to link the main centers of the Union with rural towns on a scheduled basis.

South Africa has the only aircraft production in Africa. Output of a French-designed, locally produced light utility plane, demonstrated in February 1960, is expected to build up to five planes a month, half of which are to be exported.

AIRCRAFT IN USE

About 616 civil aircraft, including 4 helicopters, are registered in the Union. All but 119 of the fixed-wing aircraft and 2 of the helicopters are U. S. made, and they include 4 DC-7B's, 4 L-749A's, 9 DC-4's, 20 DC-3's, 5 L-18 Lodestars, and 1 DC-2. Commercial scheduled and nonscheduled carriers account for some 174 of the registered aircraft. Flying instruction, business flying, aerial photography and surveying, crop dusting and spraying, and nonmilitary Government use account for 141, private use, 245, and flying clubs, 56. Most of the aircraft are registered for a variety of uses, therefore the above estimated count is based on the identifiable primary activity in which the user is engaged.

COMMERCIAL AIRLINES

Service

South African Airways (SAA), the national flag carrier, is Government owned, and operated by the South African Railways and Harbors Administration. It owns 27 aircraft, all but 7 of which are U. S.-made transports, and had ordered 3 "707" intercontinental jets for October 1960 delivery. In addition to its scheduled internal services linking the Union and South West Africa, SAA operates an extensive international service to other African territories, Europe, and Australia in either partnership or pooling arrangements with other airlines. Traffic on all of these routes has been increasing in recent years.

Commercial Air Services (Pty.) Ltd., using 2 Lodestars, provides scheduled services within the Union from Johannesburg to the Free State gold mining areas.

South West Air Transport (Pty.), Ltd., operates scheduled internal flight services using 10 light aircraft, and plans to expand its operations with scheduled and nonscheduled services into adjoining territories.

Disposal and Reequipment Programs

SAA is offering for sale four Constellations withdrawn from service and an old DC-2, and would probably sell some of its 5 DC-4's instead of the Constellations if a firm bid were made. Some of its 4 DC-7B's may also be available for sale after the new "707's" are received. Neither Commercial Air Services nor South West Air Transport has plans to dispose of any currently operating equipment.

SAA has no plans for aircraft acquisition other than the intercontinental "707's". Commercial Air Services recently applied for permission to open an additional route and if demand should increase with the expanded service, the company may be in the market for DC-3's or DC-4's. The preference in South Africa is clearly for U. S.-made aircraft. Except for SAA's Viscounts, almost all of the transport planes in operation are U. S. manufactured. The major factors hampering further acquisitions of aircraft by the local commercial airlines are the small volume of traffic and the companies' limited financial capabilities.

GENERAL AVIATION

About 577 civil aircraft are engaged in aviation activities other than scheduled commercial services. Charter or nonscheduled firms use 135, including 2 DC-4's and 11 DC-3's, and company and/or executive flying accounts for 66. Firms engaged in aerial survey work, aerial photography, crop dusting and spraying, and other special services use 41 aircraft, including 1 DC-3 and 2 L-18 Lodestars. The 31 flying clubs own 56

aircraft, registered for such uses as flight training, acrobatics, charter, and special operations.

The following companies are the only nonscheduled operators using the larger aircraft:

Trek Airways (Pty.), Ltd., the major nonscheduled carrier in the Union, is a privately owned company operating 2 DC-4's between South Africa and the United Kingdom. The Government controls the number of planes Trek may operate and the number of flights that may be made. Protea Air Services, a privately owned associate of Trek's, is licensed to operate nonscheduled flights throughout Africa and to various points in the Near East. At present Protea is operating a Vickers Viking owned by Trek. It plans to begin regular services between Johannesburg and Cairo, and has requested a license for 18 different internal routes to provide a feeder-service system covering the Union. Trek would like to expand its services, and plans to shift from its DC-4's to turboprop equipment, in which event the DC-4's would not be sold, but transferred either to Trek's English associate or to Protea.

Africair Limited is a company closely associated with the Witwatersrand Native Labor Association (WNLA) in the transportation of native labor to and from the gold mines. These two companies operate 2 DC-4's and 11 DC-3's, and neither plans any acquisitions in the near future, although WNLA tentatively plans a small reduction in its DC-3 fleet.

Aircraft Operating Company (Surveys) does primarily aerial survey work operating 5 aircraft, including 1 DC-3 and 2 L-18 Lodestars. The company has no immediate plans for expansion and therefore does not propose disposing of or adding to its present fleet.

MARKET POTENTIAL

Few firm plans have been mentioned by the South African commercial operators for the acquisition of additional aircraft. A fairly good market for DC-3's and DC-4's may develop if services expand as anticipated, but the possibilities are slight for the sale of the large U. S. surplus piston-powered aircraft.

Nearly all the registered light aircraft are of U. S. manufacture, and the greatest sales possibilities probably lie in this area. The U. S. 2-4 seat utility planes are reported to be priced better than the medium-size private planes, but U. S. makes of the latter type have been able to remain ahead of competing British aircraft in the volume of South African imports.

No preferential tariff treatment is given to the import of aircraft, aircraft spare parts, and other aircraft accessories from any foreign country. Only aircraft tire and tube imports are subject to a duty, and the rate is negligible.

Commercial airlines (scheduled operators), total			39
South African Airways (SAA):			
DC-7B	4		
Constellation 749A	4		
DC-4	5		
DC-3C	6		
DC-2	1		
Vickers Viscount 813	7		
Commercial Air Services (Pty.), Ltd.:			
Lockheed L-18 Lodestar	2		
South West Air Transport (Pty.), Ltd.:			
Ryan Navion	8		
Piper Apache PA-23	2		
General aviation, total			577
U. S. makes, total		463	
DC-3C	14		
DC-4	4		
Lockheed L-18 Lodestars	3		
Piper J3C-65 Cubs	33		
Fairchild F-24R-46A	25		
Piper PA-12	23		
Beech Bonanza	20		
Piper PA-22	96		
Piper PA-18A	31		
Cessna 182A,B	29		
Piper PA-20	13		
Cessna 172	10		
Piper PA-23	10		
Cessna 170B	10		
Cessna 180A	9		
Cessna 175	13		
Aeronca 7AC	14		
Taylorcraft BC-12D Traveler	9		
Piper PA-17	7		
Luscombe 8E Silvaire	6		
Piper PA-24	7		
Cessna 140	7		
Stinson 108-1, -3	11		
Ryan Navion	8		
Aeronca 65-C	3		
Aeronca 11AC	3		
Piper PA-14	5		
Ercoupe 415	10		
Cessna 310 Series B,C	6		
Piper PA-15	3		
Beech Super 18, Series D,E	5		
Other light utility models	14		
Benson Gyrocopter 7B	1		
Benson Gyro Glider	1		

Union of South Africa Civil Air Fleet—Con.

General aviation--Con.		
Foreign makes, total		114
De Havilland 89A Rapide	5	
De Havilland 104 Dove	4	
De Havilland 114 Heron	2	
De Havilland 82A Tiger Moth	50	
De Havilland 83A Fox Moth	2	
De Havilland 87B Hornet Moth	3	
De Havilland (Canada) Beaver	5	
Chipmunk T.10	9	
Auster J1, J5 B,G	10	
Globe Swift GC1B	7	
Other light utility models	15	
Helicopter MK V111	1	
Helicopter, Marklin H.V. 4	1	

West Africa

(The Republics of Dahomey, Ivory Coast, Mali, Niger, Senegal, Upper Volta, and Mauritania)

The political structure of the former Federation of French West Africa was altered with the establishment in 1958 of the Republics of Senegal and Mali, which became independent officially on June 20, 1960; the Republics of Ivory Coast, Dahomey, Niger, and Upper Volta, which achieved full independence in August 1960; and the Islamic Republic of Mauritania, which will have become independent in late 1960. The Republics occupy a total area of 1.7 million square miles, almost half the size of the United States, and have a combined population of more than 19.5 million. The area, mostly a plateau broken by scattered mountain ridges, extends from the Atlantic Ocean eastward 2,100 miles and from the northwestern Sahara southward almost 1,400 miles to the Gulf of Guinea.

ROLE OF AIR TRANSPORTATION

Aviation is highly important inasmuch as the area does not have an adequate surface transport system. The Republics recognize their mutual needs to coordinate their economic and social activities, to minimize obstacles to interstate trade, and to work together on problems of public concern. Air transport would provide the means for carrying people and goods from the main population centers to remote areas not being reached or served inadequately by surface transportation, and would form a vital communications and trade link with the outer world.

Domestic and international regular air service is furnished almost entirely by large French and foreign companies, although in several of the Republics limited national services are either in operation or in the process of being formed. Each of the Re-

publics has several airports, those at Dakar, Senegal, and Abidjan, Ivory Coast being capable of handling practically all commerical-size planes, including the new jets. However, many of the other airports have only short airstrips or airstrips that can accommodate only the smaller commercial aircarft.

AIRCRAFT IN USE

Of the 116 aircraft in operation, 38 are U. S.-made, 19 are British, and 59 are French. Commercial lines operate 4 DC-4's, 1 DC-3, 7 D.H. Herons, and 3 D.H. Rapides, the balance of the fleet comprising utility aircraft in charter, flying club, or private use.

COMMERCIAL AIRLINES

Service

Regular scheduled air services are conducted mainly by Air France and the *Union Aeromaritime de Transport* (UAT). Air France has 4 DC-4's permanently based in Dakar, Senegal, for regular service in the area, and 1 DC-3 for use on a rental basis by the local governments and business companies. UAT's West African fleet is composed of 7 De Havilland four-engine Heron 114's having 14-passenger capacity which are used on regular scheduled flights within the area. These companies are planning to form a subsidiary airline to operate locally, thereby providing a more reasonable flight schedule and avoiding uneconomic competition between them.

The only local scheduled airline now active in *Air Ivoire*, a private company in the Ivory Coast that provides internal services using 3 De Havilland Rapides.

Disposal and Reequipment Programs

Both Air France and UAT are reportedly planning the replacement of some of their piston aircraft with jets on routes connecting France and the franc zone of West Africa. This will release some of the DC-4's from interstate service for conversion to freight or combined passenger/freight use. UAT also plans to replace its Herons when they become unserviceable.

Air France and UAT are expected to transfer to African service for some of the longer interstate connections a few of their Constellations, that will be freed by jets on other international routes. Aircraft to replace the Herons should accommodate 15-20 passengers and be able to operate from airstrips 1,600-2,000 feet long. U. S. long-range aircraft are definitely preferred by the operators, and shorter range equipment will be purchased from whatever source provides the most suitable aircraft for African service, and depending upon availability of foreign exchange.

GENERAL AVIATION

The 101 registered small planes belong to flying clubs, to one commercial company, and to private individuals. The majority of these aircraft are French, but a large number are U. S. made and a few are British.

The private company, Societe ARDIC, Senegal, leases 19 U.S.-made aircraft for private transportation, photography, anti-locust operations, and pleasure flying. It has also recently made an agreement to furnish a tourist agency with its aircraft for tours and sightseeing. The Aeroclub of Saint-Louis has formed a company called Air-Mauritanie through which it will hire out some of its planes for specific business and tourist trips within Senegal.

Of the remaining aircraft, 13 belong to individuals, 10 to local governments, and 59 to flying clubs. These planes are also hired out for commercial use and flight instruction.

MARKET POTENTIAL

The potential demand for U.S. surplus piston-engine aircraft will depend on the final policies toward aviation evolved by the independent Republics, and on the availability of French surplus planes. In the utility aircraft field, U. S. planes have a good reputation and high prestige value, but dollars have not readily been available for purchases. Furthermore, the French manufacturers have been dominating this market because of price factors and because of their status as the traditional trading partner.

Imports of aircraft and major component parts from the United States are subject to a 5-percent customs duty, plus a transaction tax of 15.57 percent ad valorem and a statistical tax of about 4 cents per metric ton.

West African Civil Air Fleet—116

Senegal:		
Commercial airlines, total		12
Air France:		
DC-4	4	
DC-3	1	
Union Aeromaritime de Transport (UAT):		
De Havilland 114 Heron	7	
General aviation, total		49
Air Mauritanie:		
Jodel	2	
Societe ARDIC:		
Piper Super Cub, Pacer, and Apache	19	
Flying clubs, individuals, and local government:		
Piper PA Series 23	1	
Jodel DR-100, D-112, 120, and 140	17	

General aviation--Con.		
Flying clubs, individuals, and local government--Con.		
Nord Atlas 1201 and 1203	3	
Brochet MB 101	1	
Stampe	2	
Boisavia	1	
Auster 5J1, J4, and J5	2	
Tiger Moth D.H. 82A	1	
Ivory Coast:		
Air Ivoire:		
De Havilland 89A Dragon Rapide		3
General Aviation, total		21
Government, nonmilitary:		
Cessna 182	1	
Auster Autocar	1	
Piper PA-18 Super Cub	1	
Flying clubs (9):		
Emerande CP 90	6	
Jodel D-112, 117, and 119	7	
Piper Cubs	2	
Auster	2	
Private service:		
Jodel D-112	1	
Dahomey:		
General aviation, total		2
Piper PA-16 Cub	1	
Jodel D-140	1	
Islamic Republic of Mauritania:		
General aviation:		
Piper PA-16 Cub		1
Niger:		
General aviation, total		7
Piper PA-12 Cub	1	
Beech B-35 Bonanza	1	
Beech C18S	2	
Jodel D-117 and 120	3	
Upper Volta:		
General aviation, total		12
Fairchild F-24R	1	
Jodel D-112 and 120	5	
Holste 1521 C	4	
Stampe	1	
NC 858C	1	
Mali:		
General aviation, total		9
Piper PA-12	1	
Piper J3 Cub	1	
Jodel D 112	2	
Brochet MB 101	1	
Max Holste 1521C	1	
Auster 5J1,5J5	2	
Proctor V	1	

U. S. Exports of Aeronautical Products to Africa, 1957, 1958, 1959, and January-June 1960

(Dollars)

Description and country of destination	1957		1958		1959		January-June 1960	
	Number	Value	Number	Value	Number	Value	Number	Value
Aircraft, and parts and accessories, total	.....	6,641,522	.....	14,424,147	.....	2,506,171	.....	1,473,339
Commercial and civilian aircraft, total	105	5,993,431	131	14,047,167	101	2,226,603	71	1,301,664
Aircraft 3,000 pounds and over empty airframe weight	17	4,952,237	13	12,474,621	6	1,005,465	3	188,403
Passenger transports, commercial, new	11	3,284,037	7	11,223,621	1	145,000	1	65,468
3,000--14,999 pounds	10	936,423	1	42,956	1	145,000	1	65,468
Morocco	4	415,921	.....	.....	1	145,000	.....	.....
Algeria	2	269,930	.....	.....	.....	.....	.....	.....
Republic of the Congo (formerly Belgian Congo)	1	56,352	.....	.....	.....	.....	.....	.....
Union of South Africa	2	132,013	1	42,956	.....	.....	.....	.....
Federation of Rhodesia and Nyasaland	1	62,207	.....	.....	.....	.....	.....	.....
30,000 pounds and over	1	2,347,614	6	11,180,665	.....	.....	.....	.....
Republic of the Congo (formerly Belgiam Congo)	1	2,347,614	2	4,695,228	.....	.....	.....	.....
Ethiopia	.....	.....	3	4,461,000	.....	.....	.....	.....
Union of South Africa	.....	.....	1	2,024,437	.....	.....	.....	.....
Rotary-wing aircraft, commercial, new	1	131,700	.....	.....	1	75,465	2	122,935
Algeria	1	131,700	.....	.....	.....	.....	.....	.....
French Somaliland	.....	.....	.....	.....	1	75,465	.....	.....

U. S. Exports of Aeronautical Products to Africa, 1957, 1958, 1959. and January-June 1960—Con.

(Dollars)

Description and country of destination	1957		1958		1959		January-June 1960	
	Number	Value	Number	Value	Number	Value	Number	Value
Commercial and civilian aircraft,--Con.								
Aircraft 3,000 pounds and over, etc.--Con.								
Commercial and civilian aircraft, used and rebuilt, including converted.....	5	1,536,500	6	1,251,000	4	785,000	.....	.....
Algeria.....	1	650,000	1	420,000	.....	.....	.....	.....
Liberia.....	1	100,000	.....	.....	.....	.....	.....	.....
Republic of the Congo (formerly Belgian Congo).....	1	75,000	.....	.....	.....	.....	.....	.....
Ethiopia.....	1	700,000	1	26,000	.....	.....	.....	.....
Union of South Africa.....	1	11,500	2	570,000	1	275,000	.....	.....
Libya.....	.....	.....	1	75,000	3	510,000	.....	.....
Angola.....	.....	.....	1	160,000	.....	.....	.....	.....
Aircraft under 3,000 pounds empty airframe weight.....	88	1,041,194	118	1,572,546	95	1,221,138	68	1,113,261
Utility, commercial and civilian, new	84	1,021,939	113	1,551,653	86	1,187,388	65	1,090,053
3 places and under.....	29	209,962	30	228,667	31	233,885	12	89,013
Libya.....	1	7,352	.....	.....	.....	.....	.....	.....
Cameroons.....	1	8,900	.....	.....	.....	.....	.....	.....
Western Africa[1].....	4	35,845	6	54,000	1	10,000	.....	.....
Liberia.....	3	19,924	1	7,000	4	23,575	.....	.....
Republic of the Congo (formerly Belgian Congo).....	1	7,481	.....	.....	.....	.....	.....	.....
Malagasy Republic (formerly Madagascar).....	1	8,970	1	9,000	1	9,057	.....	.....
Union of South Africa.....	18	121,490	20	143,887	9	64,144	.....	.....

See footnote at end of table.

Tunisia	.....	.....	.....	.....	9	69,507	.....	.....
Ethiopia	.....	.....	.....	.....	3	28,179	.....	.....
British East Africa	.....	.....	.....	.....	1	7,394	.....	.....
Western Equatorial Africa[2]	.....	.....	2	14,780	3	22,029	.....	.....
4 places and over	58	811,977	83	1,322,986	55	953,503	53	1,001,040
Morocco	2	70,000	9	173,232	3	44,649	.....	.....
Algeria	4	82,249	1	41,000	1	50,000	.....	.....
Western Equatorial Africa[2]	1	14,421	6	72,572	2	22,492	.....	.....
Liberia	1	7,936	3	58,230	5	91,685	.....	.....
British East Africa	6	91,322	3	40,027	2	22,392	.....	.....
Mozambique	1	12,811	.....	.....	.....	.....	.....	.....
Malagasy Republic (formerly Madagascar)	1	8,000	1	16,648	2	24,859	.....	.....
Union of South Africa	37	491,682	50	806,387	29	539,013	.....	.....
Federation of Rhodesia and Nyasaland	2	33,556	2	21,968	.....	.....	.....	.....
Tunisia	.....	.....	.....	.....	6	63,352	.....	.....
Cameroon	.....	.....	.....	.....	1	37,000	.....	.....
Western Africa[1]	.....	.....	6	63,772	1	8,900	.....	.....
Nigeria	.....	.....	2	29,150	2	40,000	.....	.....
Republic of the Congo (formerly Belgian Congo)	.....	.....	.....	.....	1	9,161	.....	.....
Commercial and civilian aircraft, used and rebuilt, including converted	4	19,255	5	20,893	7	33,750	3	23,208
Angola	1	895	.....	.....	1	3,100	.....	.....
Liberia	1	4,000	.....	.....	3	10,500	.....	.....
British East Africa	1	8,500	1	4,500	.....	.....	.....	.....
Union of South Africa	1	5,860	.....	.....	.....	.....	.....	.....
Western Africa[1]	.....	.....	1	4,000	.....	.....	.....	.....
Somali Republic (formerly Somalia)	.....	.....	1	7,500	.....	.....	.....	.....
Republic of the Congo (formerly Belgian Congo)	.....	.....	.....	.....	3	20,150	.....	.....
Federation of Rhodesia and Nyasaland	.....	.....	2	4,893	.....	.....	.....	.....

See footnote at end of table.

U. S. Exports of Aeronautical Products to Africa, 1957, 1958, 1959, and January-June 1960—Con.

(Dollars)

Description and country of destination	1957		1958		1959		January-June 1960	
	Number	Value	Number	Value	Number	Value	Number	Value
Parts and accessories, total	183	648,091	128	376,980	70	279,568	57	171,675
Aircraft engines, reciprocating, new, air-cooled, under 400 horsepower[3]	51	125,609	76	173,505	39	116,380	34	90,162
Morocco	4	6,325	.....	.....	7	31,986	.....	.....
Algeria	11	37,641	28	59,100	3	10,251	.....	.....
Republic of the Congo (formerly Belgian Congo)	6	10,476	3	6,243	2	3,274	.....	.....
Western Equatorial Africa[2]	6	9,670	7	15,187	1	2,822	.....	.....
Angola	1	850	1	1,143	.....	.....	.....	.....
Malagasy Republic (formerly Madagascar)	4	6,058	1	1,200	1	1,551	.....	.....
Union of South Africa	4	8,854	5	11,412	2	5,174	.....	.....
Western Africa[1]	2	4,435	9	28,862	2	5,324	.....	.....
Nigeria	2	4,176	4	8,920	.....	.....	.....	.....
Liberia	2	6,229	6	10,111	10	27,580	.....	.....
Somali Republic (formerly Somalia)	5	14,806	3	10,288	2	5,752	.....	.....
Ethiopia	3	12,939	1	1,946	.....	.....	.....	.....
Libya	1	3,150	4	11,550	2	6,550	.....	.....
Tunisia	.....	.....	.....	.....	6	14,892	.....	.....
Cameroon	.....	.....	1	2,200	.....	.....	.....	.....
Portuguese West Africa	.....	.....	1	1,258	.....	.....	.....	.....
British East Africa	.....	.....	1	1,855	.....	.....	.....	.....
Federation of Rhodesia and Nyasaland	.....	.....	1	2,230	1	1,224	.....	.....
Aircraft engines, reciprocating, used and rebuilt	132	522,482	52	203,475	31	163,188	23	81,513
Algeria	79	331,501	2	9,374	3	6,346	.....	.....
Libya	5	22,570	5	18,265	2	10,832	.....	.....

See footnote at end of table.

Cameroon	5	19,700	5	20,200	11	45,100	.....	.....
Liberia	5	6,172	5	8,912	2	6,571	.....	.....
Republic of the Congo (formerly Belgian Congo)	6	35,446	1	975	1	525	.....	.....
Somali Republic (formerly Somalia)	1	4,700	1	5,000	1	3,112	.....	.....
Ethiopia	11	80,000	5	20,871	1	4,000	.....	.....
Malagasy Republic (formerly Madagascar)	3	3,150	4	5,400	1	640	.....	.....
Union of South Africa	7	19,943	12	72,211	7	67,311	.....	.....
Western Africa[1]	10	3,300	2	9,000	1	8,751	.....	.....
Morocco	.....	.....	5	15,344	.....	.....	.....	.....
Western Equatorial Africa[2]	.....	.....	3	14,388	.....	.....	.....	.....
Nigeria	.....	.....	.....	.....	1	10,000	.....	.....
Angola	.....	.....	1	2,185	.....	.....	.....	.....
British East Africa	.....	.....	1	1,350	.....	.....	.....	.....
U. S. WORLD EXPORTS								
Aircraft and parts and accessories, total	.....	1,028,729,000	.....	971,541,000	.....	768,980,000	.....	703,732,723
Commercial and civilian aircraft, total	2,025	248,943,000	1,689	204,051,000	1,628	152,962,000	1,174	254,148,867
Parts and accessories, total	.....	779,786,000	.....	767,670,000	.....	616,018,000	.....	449,583,856
Aircraft engines, reciprocating, new, air-cooled, under 400 horsepower	1,516	3,860,000	1,552	4,312,000	948	2,448,000	779	1,925,370
Aircraft engines, reciprocating, used and rebuilt	.....	.....	1,761	7,850,000	1,250	4,846,000	721	5,089,817
Aircraft, components, parts, and accessories, n.e.c.[4]	.....	775,926,000	.....	755,508,000	.....	608,724,000	.....	442,568,669

n.e.c.--Not elsewhere classified. [1]Western Africa (formerly French West Africa) includes the Republic of Senegal, Soudan, Dahomey, Ivory Coast, Niger, Upper Volta, Mauritania, Togo, and Guinea. [2]Western Equatorial Africa (formerly French Equatorial Africa) includes the Republic of Gabon, Chad, Congo, and Central Africa. [3]Air-cooled reciprocating engines, new, 400 horsepower and over, are included in "Aircraft components, parts, and accessories," not broken down by country. [4]Includes military aircraft.

Source: Report No. FT 410, Part II, U. S. Exports of Domestic and Foreign Merchandise, Bureau of the Census, U. S. Department of Commerce. World total figures from Current Industrial Reports--Complete Aircraft and Aircraft Engines--Bureau of the Census, U. S. Department of Commerce, and Federal Aviation Agency--January 1959 and January 1960.

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